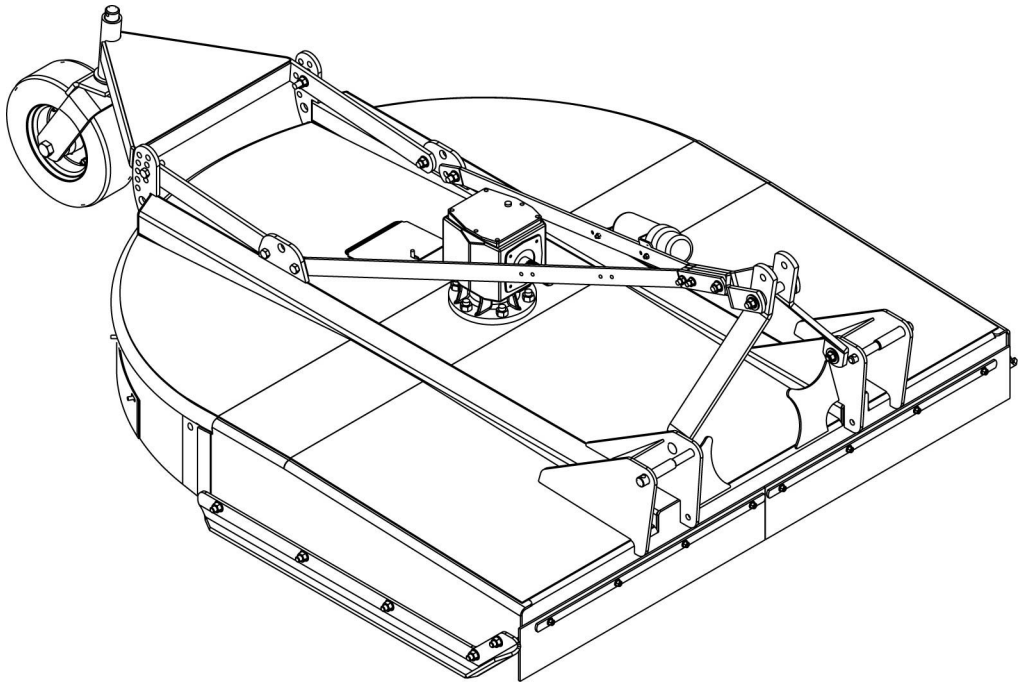
WOODS

BRUSHBULL™ ROTARY CUTTER

BB6000X
BB7200X
BB8400X



OPERATOR'S MANUAL

MAN0680
(Rev. 10/24/2008)

WOODS®

TO THE DEALER:

Assembly and proper installation of this product is the responsibility of the Woods® dealer. Read manual instructions and safety rules. Make sure all items on the Dealer's Pre-Delivery and Delivery Check Lists in the Operator's Manual are completed before releasing equipment to the owner.

The dealer must complete the Product Registration online at the Woods Dealer Website or complete the mail-in form included with the Operator's Manual. If using the mail-in form, the dealer is to return the prepaid postage portion to Woods, give one copy to the customer, and retain one copy. **Failure to register the product does not diminish customer's warranty rights.**

TO THE OWNER:

Read this manual before operating your Woods equipment. The information presented will prepare you to do a better and safer job. Keep this manual handy for ready reference. Require all operators to read this manual carefully and become acquainted with all adjustment and operating procedures before attempting to operate. Replacement manuals can be obtained from your dealer. To locate your nearest dealer, check the Dealer Locator at www.WoodsEquipment.com, or in the United States and Canada call 1-800-319-6637.

The equipment you have purchased has been carefully engineered and manufactured to provide dependable and satisfactory use. Like all mechanical products, it will require cleaning and upkeep. Lubricate the unit as specified. Observe all safety information in this manual and safety decals on the equipment.

For service, your authorized Woods dealer has trained mechanics, genuine Woods service parts, and the necessary tools and equipment to handle all your needs.

Use only genuine Woods service parts. Substitute parts will void the warranty and may not meet standards required for safe and satisfactory operation. Record the model number and serial number of your equipment in the spaces provided:

Model: _____ **Date of Purchase:** _____

Serial Number: (see Safety Decal section for location) _____

Provide this information to your dealer to obtain correct repair parts.

Throughout this manual, the term **NOTICE** is used to indicate that failure to observe can cause damage to equipment. The terms **CAUTION, WARNING,** and **DANGER** are used in conjunction with the Safety-Alert Symbol (a triangle with an exclamation mark) to indicate the degree of hazard for items of personal safety.

⚠	This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.
⚠ DANGER	Indicates a hazardous situation which, if not avoided, will result in death or serious injury.
⚠ WARNING	Indicates a hazardous situation which, if not avoided, could result in death or serious injury.
⚠ CAUTION	Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.
IMPORTANT or ***NOTICE***	Is used to address practices not related to personal injury.
NOTE	Indicates helpful information.

ALITEC™
BMP®
CENTRAL FABRICATORS®
GANNON®
GILL®
WAIN-ROY®
WOODS®

WOODS®

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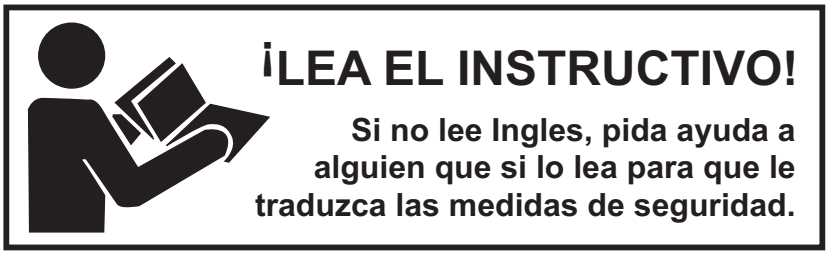
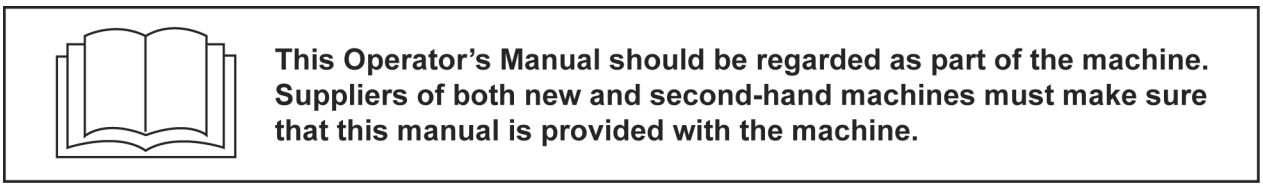



This Operator's Manual should be regarded as part of the machine. Suppliers of both new and second-hand machines must make sure that this manual is provided with the machine.

SPECIFICATIONS

Cutting Height . . . . . 2" - 12"

Blade Spindle 1

Number of Blades 2

Blades . . . . . Heat Treated Alloy Steel

Blade Rotation . . . . . CCW

Tractor PTO rpm 540

Universal Drive . . . . . Category 5

Cutter Frame Thickness . . . . . 1/4"

Tailwheel . . . . . 5" x 16"

Specification	BB6000X	BB7200X	BB8400X
Cutting Width	60"	72"	84"
Overall Width	67.5"	79.5"	91.5"
Weight (Approximate lbs.)	1300 lbs	1500 lbs	1790 lbs
Blade Speed (Feet per minute)	13,575	13,950	14,250
Gearbox	1:1.6	1:1.37	1:1.2
Recommended Maximum Tractor HP	40 - 150	50 - 150	65 - 150
3-Point Hitch	I - II	I - II	II - III

GENERAL INFORMATION

⚠ WARNING

■ **Some illustrations in this manual show the equipment with safety shields removed to provide a better view. This equipment should never be operated with any necessary safety shielding removed.**

The purpose of this manual is to assist you in operating and maintaining your cutter. Read it carefully. It furnishes information and instructions that will help you achieve years of dependable performance. These instructions have been compiled from extensive field experience and engineering data. Some information may be general in nature due to unknown and varying operating conditions. However, through experience and these instructions, you should be able to develop procedures suitable to your particular situation.

The illustrations and data used in this manual were current at the time of printing but, due to possible inline production changes, your machine may vary slightly in detail. We reserve the right to redesign and change the machines as may be necessary without notification.

Throughout this manual, references are made to right and left directions. These are determined by standing behind the equipment facing the direction of forward travel. Blade rotation is counterclockwise as viewed from the top of the cutter.

BE SAFE!

BE ALERT!

BE ALIVE!

BE TRAINED
Before Operating Mowers!

Safety Training
Does Make a Difference.

Free Mower Safety Video

Fill out and return the order form and we will send you a FREE VHS or DVD video outlining ***Industrial and Agricultural Mower Safety Practices***. The 22 minute video, developed in cooperation with AEM (Association of Equipment Manufacturers), reinforces the proper procedures to follow while operating your mowing equipment. The video does not replace the information contained in the Operator's Manual, so please review this manual thoroughly before operating your new mowing equipment.

Also, available from the Association of Equipment Manufacturers:

A large variety of training materials (ideal for groups) are available for a nominal charge from AEM. Following is a partial list:

- **Training Package for Rotary Mowers/Cutters-English**
  Contains: DVD & VHS (English)
  Guidebook for Rotary Mowers/Cutters (English)
  AEM Industrial/Agricultural Mower Safety Manual (English)
  AEM Agricultural Tractor Safety Manual (English)

- **Training Package for Rotary Mowers/Cutters-English/Spanish**
  Contains: DVD & VHS (English/Spanish)
  Guidebook for Rotary Mowers/Cutters (English/Spanish)
  AEM Industrial/Agricultural Mower Safety Manual (English/Spanish)
  AEM Agricultural Tractor Safety Manual (English/Spanish)

AEM training packages are available through:

AEM at: *www.aem.org*
or
Universal Lithographers, Inc.
Email: aem@ulilitho.com
800-369-2310 tel
866-541-1668 fax

Free Mower/Cutter Safety Video Order Form

Please send me

✓ (Select one)
☐ **VHS** Format - VHS01052 Safety Video
☐ **DVD** Format - DVD01052 Safety Video

Name: _____ Phone: _____

Address: _____

_____

_____

Mower/Cutter Model: _____ Serial #: _____

Send to: ATTENTION: DEALER SERVICES
WOODS EQUIPMENT COMPANY
PO BOX 1000
OREGON IL 61061-1000

SAFETY RULES

ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!

Safety is a primary concern in the design and manufacture of our products. Unfortunately, our efforts to provide safe equipment can be wiped out by an operator's single careless act.

In addition to the design and configuration of equipment, hazard control and accident prevention are dependent upon the awareness, concern, judgement, and proper training of personnel involved in the operation, transport, maintenance, and storage of equipment.

It has been said, "The best safety device is an informed, careful operator." We ask you to be that kind of operator.

TRAINING

■ **Safety instructions are important! Read all attachment and power unit manuals; follow all safety rules and safety decal information. (Replacement manuals and safety decals are available from your dealer. To locate your nearest dealer, check the Dealer Locator at www.WoodsEquipment.com, or in the United States and Canada call 1-800-319-6637.) Failure to follow instructions or safety rules can result in serious injury or death.**

■ **If you do not understand any part of this manual and need assistance, see your dealer.**

■ **Know your controls and how to stop engine and attachment quickly in an emergency.**

■ **Operators must be instructed in and be capable of the safe operation of the equipment, its attachments, and all controls. Do not allow anyone to operate this equipment without proper instructions.**

■ **Never allow children or untrained persons to operate equipment.**

PREPARATION

■ **Check that all hardware is properly installed. Always tighten to torque chart specifications unless instructed otherwise in this manual.**

■ **Always wear relatively tight and belted clothing to avoid getting caught in moving parts. Wear sturdy, rough-soled work shoes and protective equipment for eyes, hair, hands, hearing, and head; and respirator or filter mask where appropriate.**

■ **Make sure attachment is properly secured, adjusted, and in good operating condition.**

■ **Make sure spring-activated locking pin or collar slides freely and is seated firmly in tractor PTO spline groove.**

■ **Make sure driveline guard tether chains are attached to the tractor and equipment as shown in the pamphlet that accompanies the driveline. Replace if damaged or broken. Check that driveline guards rotate freely on driveline before putting equipment into service.**

■ **Before starting the power unit, check all equipment driveline guards for damage. Replace any damaged guards. Make sure all guards rotate freely on all drivelines. If guards do not rotate freely on drivelines, repair and replace bearings before putting equipment into service.**

■ **Power unit must be equipped with ROPS or ROPS cab and seat belt. Keep seat belt securely fastened. Falling off power unit can result in death from being run over or crushed. Keep foldable ROPS system in "locked up" position at all times.**

■ **Inspect chain, rubber, or steel band shielding before each use. Replace if damaged.**

■ **Remove accumulated debris from this equipment, power unit, and engine to avoid fire hazard.**

■ **Make sure all safety decals are installed. Replace if damaged. (See Safety Decals section for location.)**

■ **Make sure shields and guards are properly installed and in good condition. Replace if damaged.**

■ **Do not put this equipment into service unless all side skids are properly installed and in good condition. Replace if damaged.**

■ **A minimum 20% of tractor and equipment weight must be on the tractor front wheels when attachments are in transport position. Without this weight, tractor could tip over, causing personal injury or death. The weight may be attained with a loader, front wheel weights, ballast in tires or front tractor weights. Weigh the tractor and equipment. Do not estimate.**

■ **Inspect and clear area of stones, branches, or other hard objects that might be thrown, causing injury or damage.**

(Safety Rules continued on next page)

SAFETY RULES

ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!

(Safety Rules continued from previous page)

OPERATION

■ **Full chain, rubber, or steel band shielding must be installed when operating in populated areas or other areas where thrown objects could injure people or damage property.**

- **If this machine is not equipped with full chain, rubber, or steel band shielding, operation must be stopped when anyone comes within 300 feet (92 m).**
- **This shielding is designed to reduce the risk of thrown objects. The mower deck and protective devices cannot prevent all objects from escaping the blade enclosure in every mowing condition. It is possible for objects to ricochet and escape, traveling as much as 300 feet (92 m).**

■ **Do not allow bystanders in the area when operating, attaching, removing, assembling, or servicing equipment.**

■ **Never go underneath equipment (lowered to the ground or raised) unless it is properly blocked and secured. Never place any part of the body underneath equipment or between moveable parts even when the engine has been turned off. Hydraulic system leak down, hydraulic system failures, mechanical failures, or movement of control levers can cause equipment to drop or rotate unexpectedly and cause severe injury or death. Follow Operator's Manual instructions for working underneath and blocking requirements or have work done by a qualified dealer.**

■ **Never direct discharge toward people, animals, or property.**

■ **Do not operate or transport equipment while under the influence of alcohol or drugs.**

■ **Operate only in daylight or good artificial light.**

■ **Keep hands, feet, hair, and clothing away from equipment while engine is running. Stay clear of all moving parts.**

■ **Always comply with all state and local lighting and marking requirements.**

■ **Never allow riders on power unit or attachment.**

■ **Power unit must be equipped with ROPS or ROPS cab and seat belt. Keep seat belt securely fastened. Falling off power unit can result in death from being run over or crushed. Keep foldable ROPS system in "locked up" position at all times.**

■ **Always sit in power unit seat when operating controls or starting engine. Securely fasten seat belt, place transmission in neutral, engage brake, and ensure all other controls are disengaged before starting power unit engine.**

■ **Operate tractor PTO at 540 RPM (1000 RPM on Q Series cutters). Do not exceed.**

■ **Look down and to the rear and make sure area is clear before operating in reverse.**

■ **Do not operate or transport on steep slopes.**

■ **Do not stop, start, or change directions suddenly on slopes.**

■ **Use extreme care and reduce ground speed on slopes and rough terrain.**

■ **Watch for hidden hazards on the terrain during operation.**

■ **Stop power unit and equipment immediately upon striking an obstruction. Turn off engine, remove key, inspect, and repair any damage before resuming operation.**

■ **Leak down or failure of mechanical or hydraulic system can cause equipment to drop.**

TRANSPORTATION

■ **Always comply with all state and local lighting and marking requirements.**

■ **Never allow riders on power unit or attachment.**

■ **Do not operate PTO during transport.**

■ **Watch for hidden hazards on the terrain.**

■ **A minimum 20% of tractor and equipment weight must be on the tractor front wheels when attachments are in transport position. Without this weight, tractor could tip over, causing personal injury or death. The weight may be attained with a loader, front wheel weights, ballast in tires or front tractor weights. Weigh the tractor and equipment. Do not estimate.**

■ **Power unit must be equipped with ROPS or ROPS cab and seat belt. Keep seat belt securely fastened. Falling off power unit can result in death from being run over or crushed. Keep foldable ROPS system in "locked up" position at all times.**

■ **Do not operate or transport on steep slopes.**

■ **Do not operate or transport equipment while under the influence of alcohol or drugs.**

MAINTENANCE

■ **Before dismounting power unit or performing any service or maintenance, follow these steps:**

disengage power to equipment, lower the 3-point hitch and all raised components to the ground, operate valve levers to release any hydraulic pressure, set parking brake, stop engine, remove key, and unfasten seat belt.

- **Before performing any service or maintenance, disconnect driveline from tractor PTO.**

- **Before working underneath, disconnect driveline, raise cutter, lock in transport position, and block cutter securely. Hydraulic system leak down and failure of mechanical or hydraulic system can cause equipment to drop.**

- **Do not modify or alter or permit anyone else to modify or alter the equipment or any of its components in any way.**

- **Your dealer can supply original equipment hydraulic accessories and repair parts. Substitute parts may not meet original equipment specifications and may be dangerous.**

- **Always wear relatively tight and belted clothing to avoid getting caught in moving parts. Wear sturdy, rough-soled work shoes and protective equipment for eyes, hair, hands, hearing, and head; and respirator or filter mask where appropriate.**

- **Do not allow bystanders in the area when operating, attaching, removing, assembling, or servicing equipment.**

- **Never go underneath equipment (lowered to the ground or raised) unless it is properly blocked and secured. Never place any part of the body underneath equipment or between moveable parts even when the engine has been turned off. Hydraulic system leak down, hydraulic system failures, mechanical failures, or movement of control levers can cause equipment to drop or rotate unexpectedly and cause severe injury or death. Follow Operator's Manual instructions for working underneath and blocking requirements or have work done by a qualified dealer.**

- **Make sure attachment is properly secured, adjusted, and in good operating condition.**

- **Keep all persons away from operator control area while performing adjustments, service, or maintenance.**

- **Make certain all movement of equipment components has stopped before approaching for service.**

- **Frequently check blades. They should be sharp, free of nicks and cracks, and securely fastened.**

- **Do not handle blades with bare hands. Careless or improper handling may result in serious injury.**

- **Your dealer can supply genuine replacement blades. Substitute blades may not meet original equipment specifications and may be dangerous.**

- **Tighten all bolts, nuts, and screws to torque chart specifications. Check that all cotter pins are installed securely to ensure equipment is in a safe condition before putting unit into service.**

- **Make sure all safety decals are installed. Replace if damaged. (See Safety Decals section for location.)**

- **Make sure shields and guards are properly installed and in good condition. Replace if damaged.**

- **Do not disconnect hydraulic lines until machine is securely blocked or placed in lowest position and system pressure is released by operating valve levers.**

- **Leak down or failure of mechanical or hydraulic system can cause equipment to drop.**

STORAGE

- **Disconnect cutter driveshaft and secure up off ground. Raise cutter with 3-point hitch. Place blocks under cutter side skids. Lower cutter onto blocks. Disconnect cutter from tractor 3-point hitch and carefully drive tractor away from cutter.**

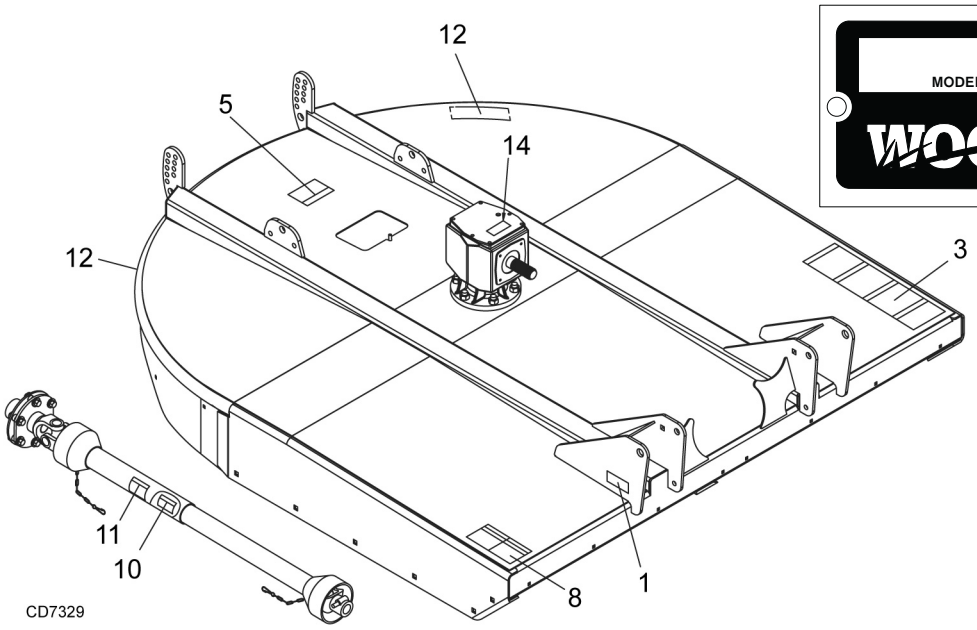
- **Keep children and bystanders away from storage area.**

SAFETY & INSTRUCTIONAL DECALS

ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!

Replace Immediately If Damaged!

1 - SERIAL NUMBER PLATE



12 - PN 57123
RED REFLECTOR 9"

8 - PN1006682

DANGER
ROTATING BLADES AND THROWN OBJECTS
Do not put hands or feet under or into mower when engine is running.
Before mowing, clear area of objects that may be thrown by blade.
Keep bystanders away.
Keep guards in place and in good condition.
BLADE CONTACT OR THROWN OBJECTS CAN CAUSE SERIOUS INJURY OR DEATH.

DANGER
ROTATING DRIVELINE
CONTACT CAN CAUSE DEATH
KEEP AWAY!
DO NOT OPERATE WITHOUT -
All driveline guards, tractor and equipment shields in place
Drivelines securely attached at both ends
Driveline guards that turn freely on driveline
1006682-A

BE CAREFUL!

Use a clean, damp cloth to clean safety decals.

Avoid spraying too close to decals when using a pressure washer; high-pressure water can enter through very small scratches or under edges of decals causing them to peel or come off.

Replacement safety decals can be ordered free from your Woods dealer, or in the United States and Canada call 1-800-319-6637.

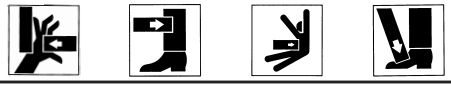
SAFETY & INSTRUCTIONAL DECALS

ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!

Replace Immediately If Damaged!

3 - PN1006681

⚠ WARNING



CRUSHING AND PINCHING HAZARD

- Be extremely careful handling various parts of the machine. They are heavy and hands, fingers, feet, and other body parts could be crushed or pinched between tractor and implement.
- Operate tractor controls from tractor seat only.
- Do not stand between tractor and implement when tractor is in gear.
- Make sure parking brake is engaged before going between tractor and implement.
- Stand clear of machine while in operation or when it is being raised or lowered.

⚠ WARNING

TO AVOID SERIOUS INJURY OR DEATH:

- Read Operator's Manual (available from dealer) and follow all safety precautions.
- Keep all shields in place and in good condition.
- Operate mower from tractor seat only.
- Lower mower, stop engine and remove key before dismounting tractor.
- Allow no children or untrained persons to operate equipment.
- Do not transport towed or semi-mounted units over 20 mph.

⚠ WARNING

FALLING OFF CAN RESULT IN BEING RUN OVER.

- Tractor must be equipped with ROPS (or ROPS CAB) and seat belt. Keep foldable ROPS systems in "locked up" position at all times.
- Buckle Up! Keep seat belt securely fastened.
- Allow no riders.

RAISED EQUIPMENT CAN DROP AND CRUSH.

- Before working underneath, follow all instructions and safety rules in operator's manual and securely block up all corners of equipment with jack stands.
- Securely blocking prevents equipment from dropping from hydraulic leakdown, hydraulic system failures or mechanical component failures.

⚠ WARNING

DO NOT EXCEED PTO SPEED OF

540 RPM

PTO speeds higher than 540 RPM can cause equipment failure and personal injury.

1006681

11 - PN18864

⚠ DANGER

ROTATING DRIVELINE

CONTACT CAN CAUSE DEATH

KEEP AWAY!

DO NOT OPERATE WITHOUT -

- All driveline guards, tractor and equipment shields in place
- Drivelines securely attached at both ends
- Driveline guards that turn freely on driveline

18864-C

14 - PN 1004114

⚠ DANGER

If shaft connection is visible, shield is missing. Replace shield before operating equipment.

1004114

5 - PN 15502

⚠ WARNING

ROTATING COMPONENTS

Do not operate without cover in place. Look and listen for rotation. Do not open cover until all components have stopped.

CONTACT WITH ROTATING PARTS CAN CAUSE SERIOUS INJURY.

15502-B

10 - PN 33347

⚠ DANGER

GUARD MISSING. DO NOT OPERATE.

⚠ DANGER

GUARD MISSING. DO NOT OPERATE.

33347E

⚠ DANGER

OPERATION

The operator is responsible for the safe operation of the cutter. The operator must be properly trained. Operators should be familiar with the cutter, the tractor, and all safety practices before starting operation. Read the safety rules and safety decals on page 7 to page 11. Be sure to complete the Pre-Operation Check List on page 16 before operating this cutter.

This heavy-duty cutter is designed for grass and weed mowing and shredding.

Recommended mowing speed for most conditions is from 2 to 5 mph.

⚠ DANGER

■ **Full chain, rubber, or steel band shielding must be installed when operating in populated areas or other areas where thrown objects could injure people or damage property.**

- **If this machine is not equipped with full chain, rubber, or steel band shielding, operation must be stopped when anyone comes within 300 feet (92 m).**
- **This shielding is designed to reduce the risk of thrown objects. The mower deck and protective devices cannot prevent all objects from escaping the blade enclosure in every mowing condition. It is possible for objects to ricochet and escape, traveling as much as 300 feet (92 m).**

⚠ WARNING

■ **Never allow riders on power unit or attachment.**

■ **Make sure spring-activated locking pin or collar slides freely and is seated firmly in tractor PTO spline groove.**

■ **Operate tractor PTO at 540 RPM. Do not exceed.**

■ **Do not allow bystanders in the area when operating, attaching, removing, assembling, or servicing equipment.**

⚠ CAUTION

■ **Stop power unit and equipment immediately upon striking an obstruction. Turn off engine, remove key, inspect, and repair any damage before resuming operation.**

■ **Always wear relatively tight and belted clothing to avoid getting caught in moving parts. Wear sturdy, rough-soled work shoes and protective equipment for eyes, hair, hands, hearing, and head; and respirator or filter mask where appropriate.**

TRACTOR STABILITY

⚠ WARNING

■ **A minimum 20% of tractor and equipment weight must be on the tractor front wheels when attachments are in transport position. Without this weight, tractor could tip over, causing personal injury or death. The weight may be attained with a loader, front wheel weights, ballast in tires or front tractor weights. Weigh the tractor and equipment. Do not estimate.**

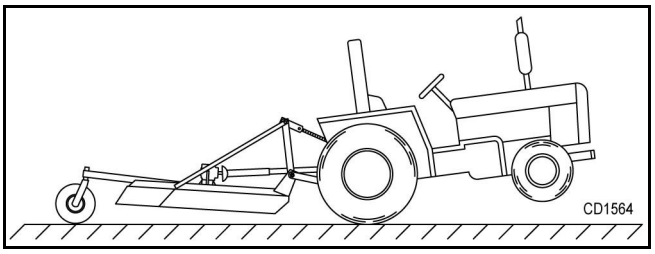


Figure 1. Tractor Stability

CONNECTING CUTTER TO TRACTOR

⚠ WARNING

■ **Make sure spring-activated locking pin or collar slides freely and is seated firmly in tractor PTO spline groove.**

■ **Make sure driveline will not bottom out at the shortest length and that it has at least 1/3 overlap at the longest length.**

■ **With cutter adjusted to transport position, set upper stop on tractor lift quadrant to prevent cutter from contacting the driveline when being raised.**

1. Attach tractor 3-point lift arms to category I or category II (Cat II or Cat III for BB8400X) side of hitch pins (5) and secure.
2. Attach tractor top link (1) to cutter top link attachment point (2). See Figure 2.
3. Raise cutter to transport position and adjust tractor top link until cutter is level in this position.
4. Adjust the tractor lower 3-point arm anti-sway devices to prevent cutter from swinging side to side during transport.
5. Adjust tractor drawbar so that it will not interfere with cutter or driveline.

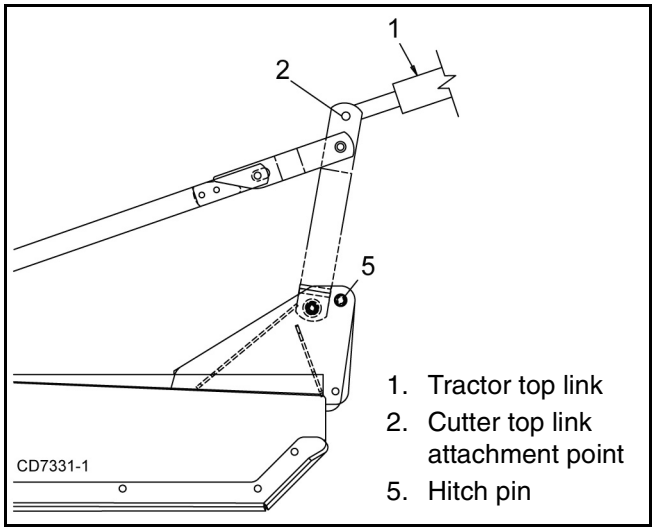


Figure 2. Cutter to Tractor Connection

QUICK HITCH SET-UP

Refer to Figure 3 and Figure 4.

Category I and II for BB6000X, BB7200X

1. CAT I: No adjustment is required.
2. CAT II: Remove hardware securing lift arms to mounting lugs. Move lift arms forward to second holes and insert caps screws. Tighten hardware.
3. Install mounting pins as shown in Figure 4 for correct hitch configuration.

Category II and III for BB8400X

1. CAT II: No adjustment is required.
2. CAT III: Remove hardware securing lift arms to mounting lugs. Move lift arms forward to second holes and insert cap screws. Tighten hardware.
3. Install mounting pins as shown in Figure 4 for correct hitch configuration.

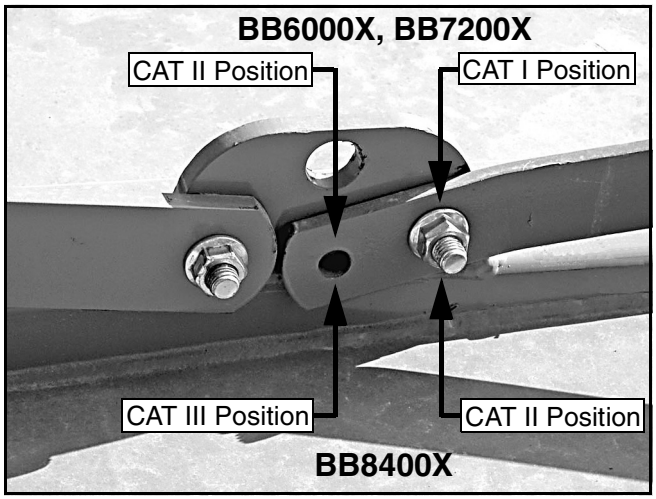


Figure 3. Left Rail Mounting Lug

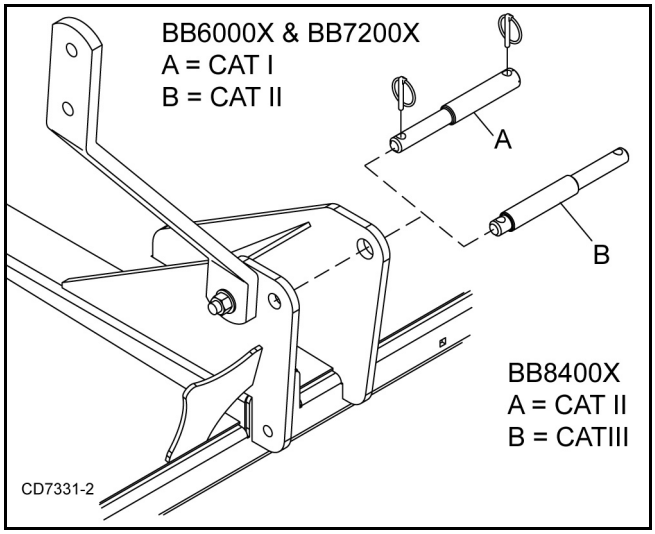


Figure 4. Mounting Pin Installation

DRIVELINE ADJUSTMENT

NOTICE

■ **Avoid contact with driveline when raising cutter.**

■ **Make sure driveline will not bottom out at the shortest length and that it has at least 1/3 overlap at the longest length.**

■ **With cutter adjusted to transport position, set upper stop on tractor lift quadrant to prevent cutter from contacting the driveline when being raised.**

Attach the cutter to the tractor 3-point hitch (or quick hitch if available). Do not attach driveline. Raise and lower cutter to determine maximum and minimum distance between the tractor PTO shaft and the gearbox input shaft. If the distance is too large, the driveline will be too short for proper engagement. If distance is too small, the driveline may bottom out in operation and damage the cutter or tractor.

The driveline length must be sufficient to provide at least 1/3 driveline length of engagement during operation. There must be at least 4 inches of engagement at the cutter's lowest possible point of operation. The driveline must not bottom out when raised to the maximum height possible.

If driveline is too short, please call your Woods dealer for a longer driveline.

If driveline is too long, please follow the instructions for shortening the driveline.

Shortening Driveline

1. Move cutter up and down to get the shortest possible distance between tractor PTO shaft and gearbox input shaft.

2. Separate driveline into two halves and connect them to the tractor PTO and gearbox.

3. Place driveline halves parallel to one another to determine how much to shorten the driveline.

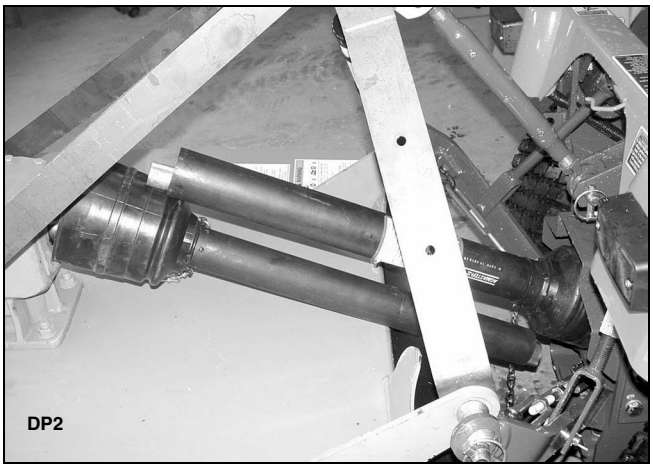


Figure 5. Drive Halves Placed Parallel

4. Measure from end of the upper shield to the base of the bell on the lower shield (A). Add 1-9/16" to dimension (A). See Figure 6.

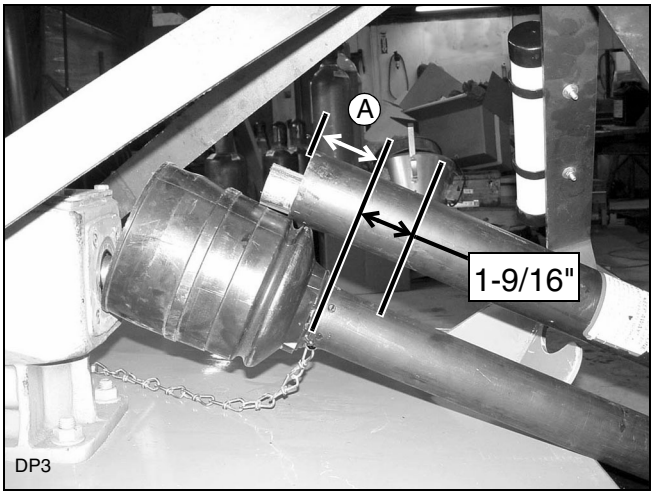


Figure 6. Determine Shield Length

5. Cut the shield to the overall dimension.

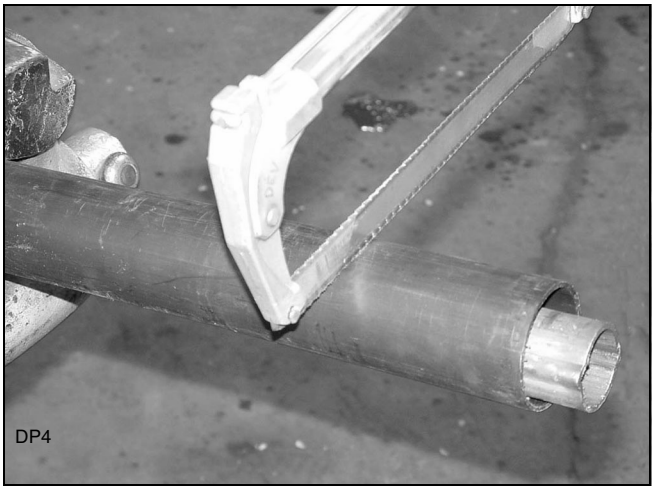


Figure 7. Cut Shield

6. Place the cutoff portion of the shield against the end of the shaft and use as a guide. Mark and cut the shaft.

Figure 8. Cut Shaft to Length

7. Repeat step 6 for the other half of the drive.

8. File and clean cut ends of both drive halves.

Do not use tractor if proper driveline engagement cannot be obtained through these methods.

Connect driveline to tractor PTO shaft, making sure the spring-activated locking collar slides freely and locks driveline to PTO shaft.

NOTICE

■ **If attaching with quick hitch, the distance between the tractor PTO and gearbox input shaft will increase. Please follow the steps as you would for a 3-point hitch to insure proper engagement.**

DRIVELINE INTERFERENCE CHECK

1. Check for clearance between driveline and cutter deck.
2. Slowly lift cutter and observe driveline. If clearance between driveline and cutter deck is less than 1 inch, shorten top link or limit upper travel of lower hitch arms. Refer to tractor operator's manual for instructions.

CUTTING HEIGHT ADJUSTMENT

⚠ WARNING

■ **Before working underneath, disconnect driveline, raise cutter, lock in transport position, and block cutter securely. Hydraulic system leak down and failure of mechanical or hydraulic system can cause equipment to drop.**

■ **Keep all persons away from operator control area while performing adjustments, service, or maintenance.**

■ **Avoid low cutting heights. Striking the ground with blades produces one of the most damaging shock loads a cutter can encounter. Allowing blades to contact ground repeatedly will cause damage to cutter and drive.**

When selecting a cutting height, you should consider the area of operation. If the ground is rolling and has mounds the blades could contact, set the cutting height accordingly.

1. Level cutter from side to side. Check by measuring from cutter frame to the ground at each deck rail.
2. Adjust, using tractor 3-point arm leveling device.

   NOTE: Keep the front of cutter level with or slightly lower than rear for best mowing.
3. Control cutting height with tractor 3-point arms, rear tailwheel adjustment, or optional check chains.
4. To raise rear of cutter, move tailwheel down.
5. To raise front of cutter, raise tractor 3-point arms or shorten optional check chains.

   The cutting height is the distance between the blade and the ground. The blades are approximately 11.5" below the deck. To check cutting height, do the following:

   a) Place a straight edge along top edge of deck.

   b) Select a cutting height; as an example, for an approximate cutting height of 3", set the center of the deck 14.5" above the ground:

3"	Desired cutting height
+ 11.5"	Distance blade cutting edge is below deck
= 14.5"	

   c) Adjust the front-to-rear attitude from 1/2" to 3/4" higher than the front.

CHECK CHAIN ADJUSTMENT

1. Refer to Check Chain Installation (Optional), page 33 for check chain installation.
2. After making cutting height adjustment, adjust both chains (3) in check chain bracket (2) so you have the same number of links on each side. This will keep your cutting level.

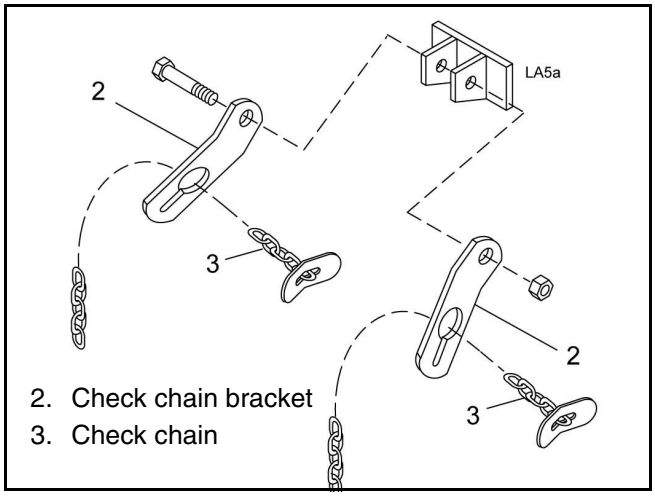


Figure 9. Check Chain Adjustment

DRIVELINE INSTALLATION (TRACTOR PTO)

To Install:

Pull locking collar back and at the same time push driveline onto tractor PTO shaft until locking device engages.

To Remove:

Hold driveline into position, pull locking collar back, and slide driveline off tractor PTO shaft.

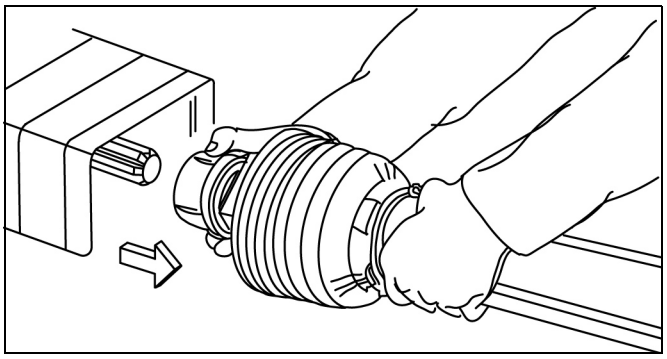


Figure 10. Lock Collar

OPERATING TECHNIQUE

1. Power for operating the cutter is supplied by the tractor PTO. Operate PTO at 540 rpm. Know how to stop the tractor and cutter quickly in an emergency.

2. Engage PTO at a low engine rpm to minimize stress on the drive system and gearbox. With PTO engaged, raise PTO speed to 540 rpm and maintain throughout cutting operation.

   Gearbox protection is provided by a slip clutch with replacement fiber disc. The slip clutch is designed to slip when excessive torsional loads occur.

3. Move slowly into material. Adjust tractor ground speed to provide a clean cut without lugging the tractor engine. Use a slow ground speed for better shredding.

   Proper ground speed will depend on the terrain and the material's height, type, and density.

   Normally, ground speed will range from 2 to 5 mph. Tall, dense material should be cut at a low speed; thin, medium-height material can be cut at a faster ground speed.

4. Always operate tractor PTO at 540 rpm to maintain proper blade speed and to produce a clean cut.

5. Under certain conditions tractor tires may roll down some grass and prevent cutting at the same height as the surrounding area. When this occurs, reduce your ground speed but maintain PTO at 540 rpm. The lower ground speed will permit grass to rebound partially.

SHREDDING MATERIAL

For shredding, set the cutter lower at rear. Determine how much lower to set the rear by experimenting in different situations.

STORAGE

⚠ WARNING

■ **Disconnect cutter driveshaft and secure up off ground. Raise cutter with 3-point hitch. Place blocks under cutter side skids. Lower cutter onto blocks. Disconnect cutter from tractor 3-point hitch and carefully drive tractor away from cutter.**

■ **Keep children and bystanders away from storage area.**

PRE-OPERATION CHECK LIST

OWNER'S RESPONSIBILITY

___ Review and follow all safety rules and safety decal instructions on page 7 through page 11.

___ Check that equipment is properly and securely attached to tractor.

___ Make sure driveline spring-activated locking pin or collar slides freely and is seated firmly in tractor PTO spline groove.

___ Set tractor PTO at 540 rpm.

___ Lubricate all grease fitting locations. Make sure PTO shaft slip joint is lubricated.

___ Check to be sure gear lube runs out the small check plug on side of gearbox.

___ Check that all hardware is properly installed and secured.

___ Check that blades are sharp and secure and cutting edge is positioned to lead in a counterclockwise rotation.

___ Check that shields and guards are properly installed and in good condition. Replace if damaged.

___ Check cutting height, front-to-rear attitude, and top link adjustment.

___ Place tractor PTO and transmission in neutral before starting engine.

___ Inspect area to be cut and remove stones, branches, or other hard objects that might be thrown and cause injury or damage.

OWNER SERVICE

The information in this section is written for operators who possess basic mechanical skills. If you need help, your dealer has trained service technicians available. For your protection, read and follow the safety information in this manual.

⚠ WARNING

■ **Keep all persons away from operator control area while performing adjustments, service, or maintenance.**

⚠ CAUTION

■ **If you do not understand any part of this manual and need assistance, see your dealer.**

■ **Always wear relatively tight and belted clothing to avoid getting caught in moving parts. Wear sturdy, rough-soled work shoes and protective equipment for eyes, hair, hands, hearing, and head; and respirator or filter mask where appropriate.**

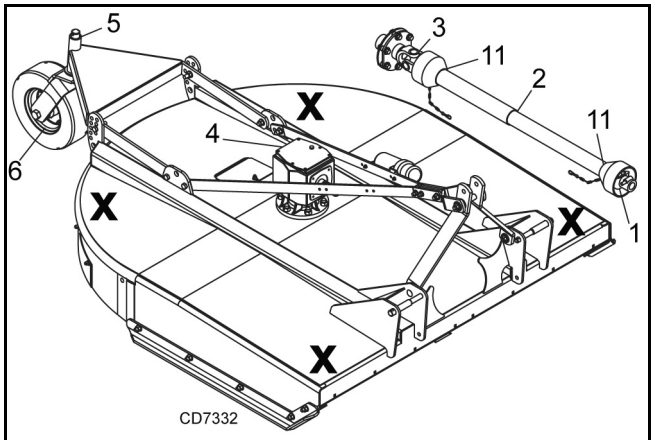
BLOCKING METHOD

⚠ WARNING

■ **Never go underneath equipment (lowered to the ground or raised) unless it is properly blocked and secured. Never place any part of the body underneath equipment or between moveable parts even when the engine has been turned off. Hydraulic system leak down, hydraulic system failures, mechanical failures, or movement of control levers can cause equipment to drop or rotate unexpectedly and cause severe injury or death. Follow Operator's Manual instructions for working underneath and blocking requirements or have work done by a qualified dealer.**

To minimize the potential hazards or working underneath the cutter, follow these procedures:

1. Jackstands with a load rating of 1000 lbs or more are the only approved blocking device for this cutter. Install a minimum of four jackstands (shown by **X**s in Figure 11) under the cutter before working underneath unit.
2. Do not position jackstands under wheels, axles, or wheel supports. Components can rotate and cause cutter to fall.
3. Consider the overall stability of the blocked unit. Just placing jackstands underneath will not ensure your safety.
4. The working surface must be level and solid to support the weight on the jackstands. Make sure jackstands are stable, both top and bottom. Make sure cutter is approximately level.
5. With full cutter weight lowered onto jackstands, test blocking stability before working underneath.
6. If cutter is attached to tractor when blocking, set the brakes, remove key, and block cutter before working underneath.
7. Securely block rear tractor wheels, in front and behind. Tighten tractor lower 3-point arm anti-sway mechanism to prevent side-to-side movement.



1. Front U-joint- - - - - - - - - - - - 8 hrs.
2. Slip joint (apply grease to square shaft) - - - - - - - - - 8 hrs.
3. Rear U-joint - - - - - - - - - - - - 8 hrs.
4. Gearbox - - - - - - - - - - - - - - -Daily
5. Tailwheel pivot tube - - - - - - 8 hrs.
6. Tailwheel - - - - - - - - - - - - - 8 hrs.
11. Plastic shield bearings - - - 10 hrs.

Figure 11. Jackstand Placement & Lubrication Points

LUBRICATION INFORMATION

Use a lithium grease of #2 consistency with a MOLY (molybdenum disulfide) additive for all locations unless otherwise noted. Be sure to clean fittings thoroughly before attaching grease gun. One good pump of most guns is sufficient when the lubrication schedule is followed.

Do not let excess grease collect on or around parts, particularly when operating in sandy areas.

See Figure 11 for lubrication points and frequency or lubrication based on normal operating conditions. Severe or unusual conditions may require more frequent lubrication.

Gearbox Lubrication

For gearbox, use a high quality gear oil with a viscosity index of 80W or 90W and an API service rating of GL-4 or -5 in gearboxes. Fill gearbox until oil runs out the side plug on gearbox. Check gearbox daily for evidence of leakage, and contact your dealer if leakage occurs.

Driveline Lubrication

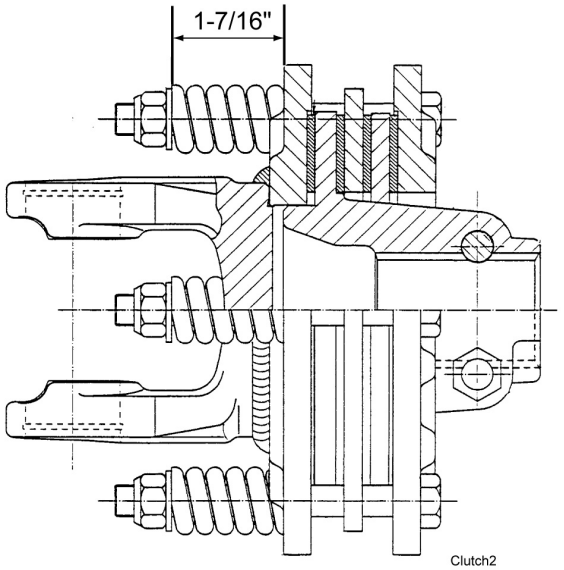
1. Lubricate the driveline slip joint every eight operating hours. Failure to maintain proper lubrication could result in damage to U-joints, gearbox, and driveline.
2. Lower cutter to ground, disconnect driveline from tractor PTO shaft, and slide halves apart but do not disconnect from each other.
3. Apply a bead of grease completely around male half where it meets female half. Slide drive halves over each other several times to distribute grease.

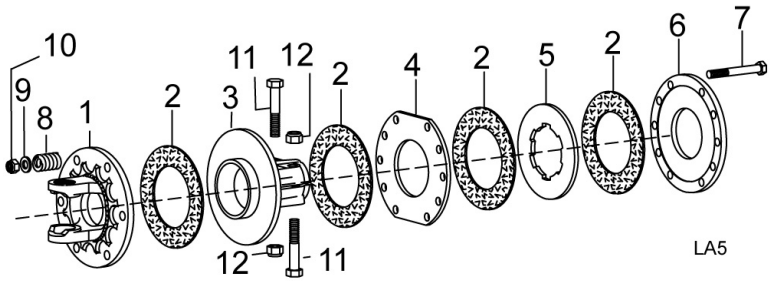
SLIP CLUTCH ADJUSTMENT

The slip clutch is designed to slip so that the gearbox and driveline are protected if the cutter strikes an obstruction.

A new slip clutch or one that has been in storage over the winter may seize. Before operating the cutter, make sure it will slip by performing the following operation:

1. Turn off tractor engine and remove key.
2. Remove driveline from tractor PTO.
3. Loosen six 12 mm cap screws (7) to remove all tension from the compression springs (8).
4. Hold clutch hub (3) solid and turn shaft to make sure clutch slips.
5. If clutch does not slip freely, disassemble and clean the flange yoke (1), clutch hub (3), drive plate (4), drive plate (5), and thrust plate faces (6).
6. Reassemble clutch.
7. Compress each of the six compression springs (8) by tightening the six cap screws (7) and lock nuts (10). The compression springs should be compressed to a height of 1-7/16", not including washer (9). The minimum spring height is 1.36". See Figure 12.
8. If a clutch continues to slip when the springs are compressed to 1.36", check friction discs (2) for excessive wear. Discs are 1/8" when new. Replace discs after 1/16" wear.



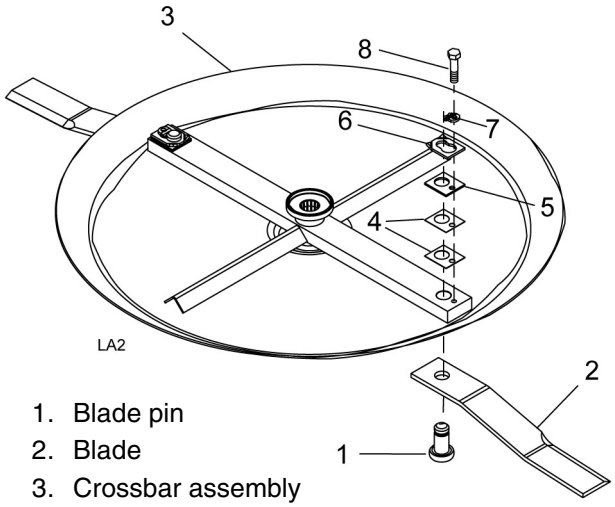


1. Flange yoke
2. Friction disc
3. Hub, 1-3/4" 20 Spline
4. Drive plate
5. Drive plate
6. Thrust plate
7. 12 mm x 115 mm GR8.8 HHCS
8. Compression spring
9. Flat washer
10. 12 mm x 1.25P Nylok lock nut
11. 12 mm x 65 mm GR8.8 HHCS
12. 12 mm x 1.5P Nylok lock nut

Figure 12. Slip Clutch Assembly

BLADE SERVICE

Blade Removal



1. Blade pin
2. Blade
3. Crossbar assembly
4. 18ga x 1-1/2 Shim
5. 20ga x 1-1/2 Shim
6. Key hole plate
7. Blade pin lock clip
8. 1/2 x 1-1/4 Cap screw GR5

Figure 13. Blade Assembly

NOTICE

■ **If blade pin (1) is seized in crossbar and extreme force will be needed to remove it, support crossbar from below to prevent gearbox damage.**

1. Disconnect driveline from tractor PTO.
2. Raise cutter and block securely (see Figure 11).
3. Open blade access cover and align crossbar assembly (3) with blade access hole in the cutter frame. Remove cap screw (8) blade pin lock clip (7) keyhole plate (6) and shims (5 & 4). Carefully drive blade pin out of crossbar.
4. Rotate crossbar and repeat for opposite blade.

Blade Installation

Refer to Figure 13.

⚠ CAUTION

■ **Your dealer can supply genuine replacement blades. Substitute blades may not meet original equipment specifications and may be dangerous.**

NOTICE

■ **Crossbar rotation is counterclockwise when looking down on cutter. Be sure to install blade cutting edge to lead in counterclockwise rotation.**

■ **Always replace or sharpen both blades at the same time.**

1. Inspect blade pin (1) for nicks or gouges, and if you find any, replace the blade pin.
2. Insert blade pin through the blade. Blade should swivel on blade pin; if it doesn't, determine the cause and correct.
3. Align crossbar assembly (3) with blade access hole in cutter frame. Apply a liberal coating of Never Seez® or equivalent to blade pin and crossbar hole. Make sure blade offset is away from cutter.
4. Insert blade pin (1) through blade. Push blade pin through crossbar.
5. Install shims (4 & 5) over blade pin.

   NOTE: Only use enough shims to allow keyhole plate (6) to slide into blade pin groove.
6. Install blade clip (7) over keyhole plate and into blade pin groove.
7. Secure into position with cap screw (8). Torque cap screw to 85 lbs-ft.
8. Repeat steps for opposite side.

   NOTE: Blade should be snug but should swivel on pin without having to exert excessive force. Keep any spacers not used in the installation as replacements or for future installation.

Blade Sharpening

NOTICE

■ **When sharpening blades, grind the same amount on each blade to maintain balance. Replace blades in pairs. Unbalanced blades will cause excessive vibration, which can damage gearbox bearings. Vibration may also cause structural cracks to cutter.**

1. Sharpen both blades at the same time to maintain balance. Follow original sharpening pattern.
2. Do not sharpen blade to a razor edge—leave at least a 1/16" blunt edge.
3. Do not sharpen back side of blade.

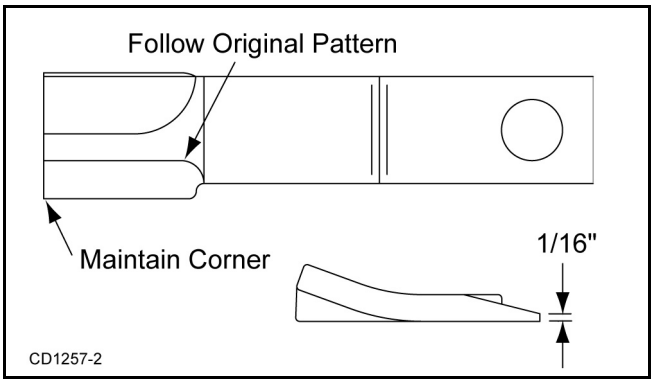


Figure 14. Blade Sharpening

SHIELDING REPAIR

⚠ DANGER

■ **Full chain, rubber, or steel band shielding must be installed when operating in populated areas or other areas where thrown objects could injure people or damage property.**

- **If this machine is not equipped with full chain, rubber, or steel band shielding, operation must be stopped when anyone comes within 300 feet (92 m).**
- **This shielding is designed to reduce the risk of thrown objects. The mower deck and protective devices cannot prevent all objects from escaping the blade enclosure in every mowing condition. It is possible for objects to ricochet and escape, traveling as much as 300 feet (92 m).**

Rear Band

Inspect rear band each day of operation, replace if bent, cracked, or broken.

Rubber Shielding

Inspect rubber shielding each day of operation and replace if cracked or broken.

Chain Shielding (Optional)

Inspect chain shielding each day of operation and replace any broken or missing chains as required.

CLEANING CUTTER

After Each Use

- Remove large debris such as clumps of dirt, grass, crop residue, etc. from machine.
- Inspect machine and replace worn or damaged parts.
- Replace any safety decals that are missing or not readable.

Periodically or Before Extended Storage

- Clean large debris such as clumps of dirt, grass, crop residue, etc. from machine.
- Remove the remainder using a low-pressure water spray.
  1. Be careful when spraying near scratched or torn safety decals or near edges of decals as water spray can peel decal off surface.
  2. Be careful when spraying near chipped or scratched paint as water spray can lift paint.
  3. If a pressure washer is used, follow the advice of the pressure washer manufacturer.
- Inspect machine and replace worn or damaged parts.
- Sand down scratches and the edges of areas of missing paint and coat with Woods spray paint of matching color (purchase from your Woods dealer).
- Replace any safety decals that are missing or not readable (supplied free by your Woods dealer).
- See Safety Decals section for location drawing.

TROUBLESHOOTING

MOWING CONDITIONS

PROBLEM	POSSIBLE CAUSE	SOLUTION
Grass cut lower in center of swath than at edge	Height of cutter lower at rear or front	Adjust cutter height and attitude so that cutter rear and front are within 1/2" of same height. See Cutting Height Adjustment, page 15.
Streaking conditions in swath	Conditions too wet for mowing	Allow grass to dry before mowing.
	Blades unable to cut that part of grass pressed by path of tractor tires	Slow ground speed of tractor but keep engine running at full PTO rpm. Cutting lower will help.
	Dull blades	Sharpen or replace blades.
Material discharges from cutter unevenly; bunches of material along swath	Material too high and too much material	Reduce ground speed but maintain 540 rpm at tractor PTO or make two passes over material. Raise cutter for the first pass and lower to desired height for the second and cut at 90° to first pass. Raise rear of cutter high enough to permit material to discharge but not so high to cause conditions listed above.
	Grass wet	Allow grass to dry before mowing. Slow ground speed of tractor but keep engine running at full PTO rpm. Cutting lower will help.
	Rear of cutter too low, trapping material under cutter	Adjust cutter height and attitude.
Cutter will not cut all the time (Slip clutch drive only)	Slip clutch slipping	Adjust slip clutch according to instructions in SLIP CLUTCH ADJUSTMENT, page 18.

The information in this section is written for dealer service personnel. The repair described here requires special skills and tools. If your shop is not properly equipped or your mechanics are not properly trained in this type of repair, you may be time and money ahead to replace complete assemblies.

⚠ WARNING

■ **Before working underneath, read manual instructions, securely block up, and check stability. Secure blocking prevents equipment from dropping due to hydraulic leak down, hydraulic system failure, or mechanical component failure.**

■ **Keep all persons away from operator control area while performing adjustments, service, or maintenance.**

⚠ CAUTION

■ **Always wear relatively tight and belted clothing to avoid getting caught in moving parts. Wear sturdy, rough-soled work shoes and protective equipment for eyes, hair, hands, hearing, and head; and respirator or filter mask where appropriate.**

GEARBOX MAINTENANCE

NOTE: Read this entire section before starting any repair. Many steps are dependent on each other.

1. Fill gearbox with SAE 80W or 90W gear lube until it runs out the side level plug.

   NOTE: Repair to this gearbox is limited to replacing bearings, seals, and gaskets. Replacing gears, shafts, and a housing is not cost effective. Purchasing a complete gearbox is more economical.

2. Inspect gearbox for leakage and bad bearings. Leakage is a very serious problem and must be corrected immediately.

   Bearing failure is indicated by excessive noise and side-to-side or end-play in gear shafts.

Seal Replacement

Recommended sealant for gearbox repair is Permatex® Aviation 3D Form-A-Gasket or equivalent.

Leakage can occur at the vertical or horizontal gaskets and shaft seals.

Leakage at the horizontal gasket or seal can be repaired without removing the gearbox from the cutter.

Seal Installation

Refer to Figure 17.

NOTE: Proper seal installation is important. An improperly installed seal will leak.

1. Clean area in housing where seal outer diameter (OD) seats. Apply a thin coat of Permatex®.

2. Inspect area of shaft where seal seats. Remove any burrs or nicks with an emery cloth.

3. Lubricate gear shaft and seal lips.

4. Place seal squarely on housing, spring-loaded lip toward housing. Select a piece of pipe or tubing with an OD that will sit on the outside edge of the seal but will clear the housing. Tubing with an OD that is too small will bow seal cage and ruin seal.

5. Carefully press seal into housing, avoiding distortion to the metal seal cage.

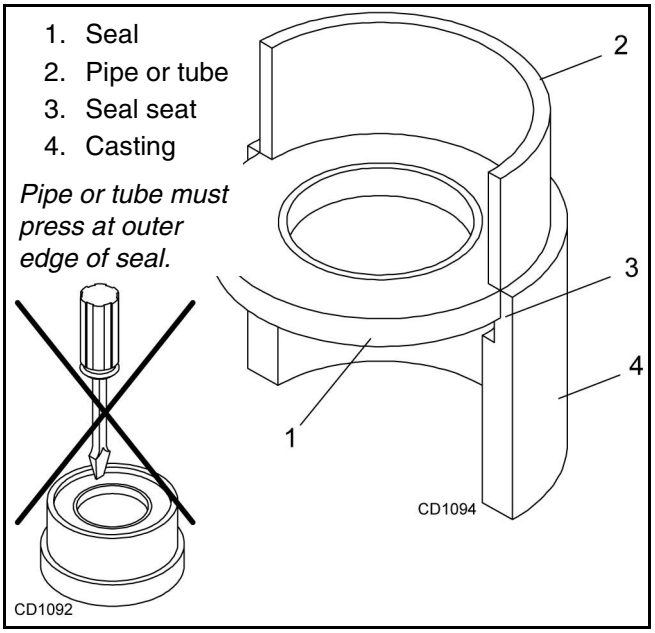


Figure 17. Seal Installation

Vertical Shaft Repair

Refer to Figure 18.

1. Disconnect and remove the driveline from the gearbox.
2. Remove vent plug (24) and siphon gear lube from housing through this opening.
3. Remove crossbar (see **Crossbar Removal, page 25**).
4. Remove protective seal (8) and vertical shaft seal (18). Replace seal (18) with new seal (see **Seal Replacement, page 22**).

   Vertical seal should be recessed in housing. Horizontal seal (19) should be pressed flush with outside of housing.

   NOTE: Distortion to seal cage or damage to seal lip will cause seal to leak.
5. Fill gearbox with SAE 80W or 90W gear lube until it runs out the level plug.
6. Remove and replace any seal damaged in installation.

Horizontal Shaft Leak Repair

Refer to Figure 18.

1. Disconnect and remove the driveline from the gearbox.
2. Remove vent plug (24) and siphon gear lube from housing through this opening.
3. If the leak occurred at either end of horizontal shaft, remove oil cap (20) and/or oil seal (19). Replace with new one (refer to **Seal Replacement, page 22**).
4. Fill gearbox with SAE 80W or 90W gear lube until it runs out the level plug.

1. Crown gear
2. Gearbox housing
3. Input shaft
4. Output shaft
5. Gear pinion
6. Bearing
7. Input bearing
8. Protective seal
9. Cotter pin
10. Snap ring
11. Snap ring
12. Shim, 45.3 x 2.5
13. Shim, 70.3 x 84.7
14. Nut
15. Castle nut
16. Shim, 50.3 x 70.3
17. Shim
18. Oil seal (Vertical Shaft)
19. Oil seal (Horizontal Shaft)
20. Cap
22. Top cover
23. Cap screw 8 mm x 16 (8.8)
24. Vent plug
25. Cotter pin
26. Washer

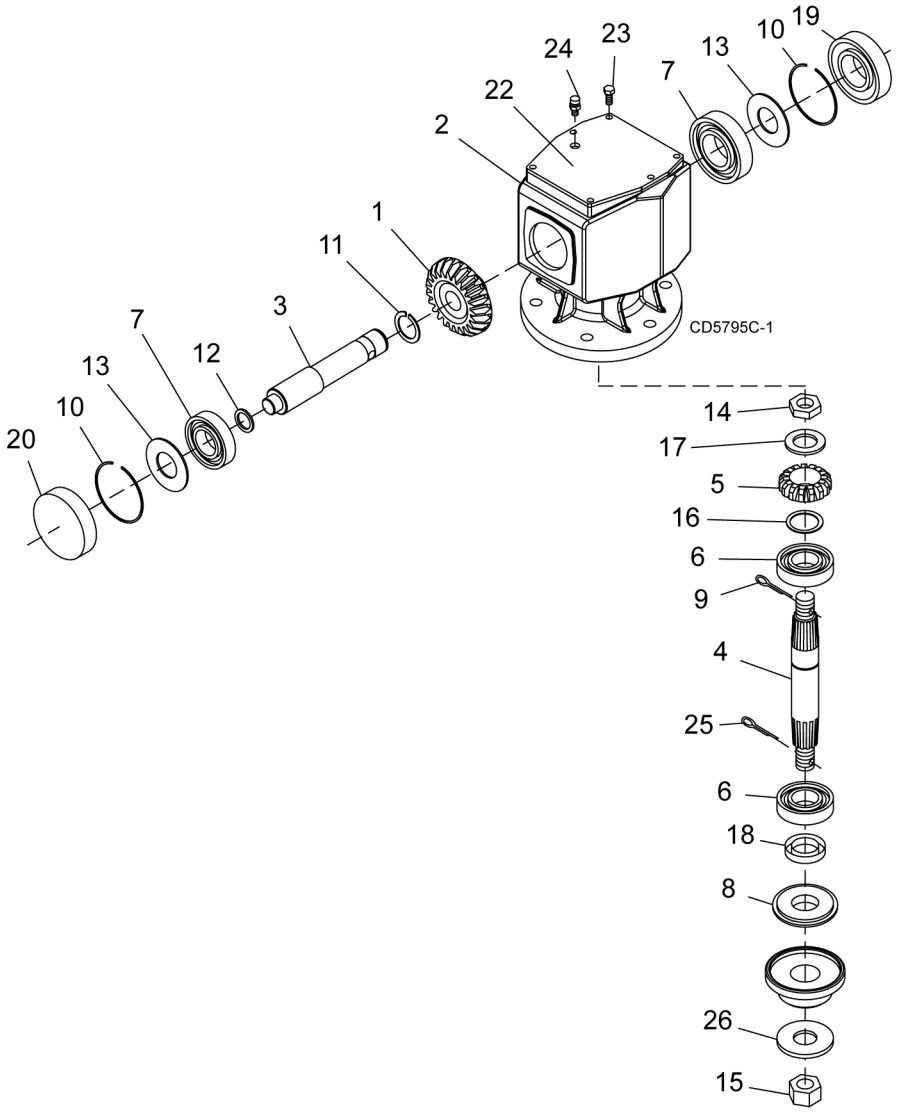


Figure 18. Gearbox Assembly

GEARBOX REPAIR

Remove Gearbox from Cutter

Refer to Figure 18.

1. Disconnect and remove the rear driveline from the gearbox.
2. Remove breather level plug (24) and siphon gear lube from housing through this opening.
3. Remove 9 ga. wire and nut from vertical shaft and remove crossbar (see **Crossbar Removal, page 25**).
4. Remove the six bolts that attach gearbox to cutter and remove gearbox.

Disassemble Gearbox

Refer to Figure 18.

1. Remove plug from side of gearbox and pour out gear oil.
2. Remove oil cap (20) (to be replaced).
3. Remove snap ring (10) and shim (13) from input shaft (3).
4. Support gearbox in hand press and push on input shaft (3) to remove bearing (7).
5. Remove six cap screws (23) and top cover (22) from housing. Remove gear (1) from inside housing.
6. Remove oil seal (19) from front of housing (to be replaced).
7. Remove snap ring (10) and shim (13) from front of housing (2).
8. Remove input bearing (7) by using a punch and hammer from outside of housing.
9. Support housing in vise in a horizontal position.
10. The castle nut (15), 9 ga. wire (25), and hub are already removed with the stump jumper/crossbar. Remove the protective seal (8), and oil seal (18).
11. Remove cotter pin (9), castle nut (14), and washer (17) from output shaft (4).
12. Remove output shaft (4) by using a punch and hammer and tap on top to drive down. Remove gear (5) and shim (16) from inside housing.
13. Remove bottom bearing (6) by using a punch and hammer from the top, outside the housing.
14. Support housing upside down (top cover surface) and remove second bearing (6) by using a punch and hammer from the bottom side of the housing.
15. Inspect gears for broken teeth and wear. Some wear is normal and will show on loaded side. Forged gear surfaces are rough when new. Check that wear pattern is smooth.
16. Inspect vertical and horizontal shafts for grooves, nicks, or bumps in the areas where the seals seat. Resurface any damage with emery cloth.
17. Inspect housing and caps for cracks or other damage.

Gearbox Assembly

Refer to Figure 18.

NOTE: Repair to this gearbox is limited to replacing bearings, seals, and gaskets. Replacing gears, shafts, and a housing is not cost effective. Purchasing a complete gearbox is more economical.

1. Clean housing, paying specific attention to areas where gaskets will be installed.
2. Wash housing and all components thoroughly. Select a clean area for gearbox assembly. Replace all seals, bearings, and gaskets. All parts must be clean and lightly oiled before reassembling.
3. Insert both output bearings (6) in the housing, using a round tube of the correct diameter and a hand press.
4. Slide output shaft (4) through both bearings (6) until it rests against top bearing (6).
5. Slide shim (16) over output shaft (4).
6. Press gear (5) onto output shaft (4) and secure with washer (17), castle nut (14), and cotter pin (9).
7. Apply grease to lower seal lips (18) and press seal (18) over output shaft (4), using a tube of the correct diameter. Be sure not to damage the seal lip.

   Press in housing so that seal is recessed. Press protective seal (8) until seated flush with housing. Verify that the seal (8) is seated correctly.
8. Press bearing (7) into the housing, using a round tube of the correct diameter and a hand press. Secure with shim (13) and snap ring (10).
9. Secure snap ring (11) on input shaft (3) if not already secure.
10. Place gear (1) through top of housing and align gear (1) and gear (5) so that gear teeth are a match.
11. While holding gear (1) in place, slide input shaft (3) through gear (1) and bearing (7). Align splines on shaft (3) and gear (1).
12. Slide spacer (12) over input shaft (3) and press bearing (7) onto input shaft (3), using a round tube of the correct diameter and a hand press.

13. Slide shim (13) over input shaft (3) and secure with snap ring (10).
14. Check input shaft end float by moving the input shaft (3) by hand. If end float is higher than 0.012", insert shim between input shaft (3) and rear bearing (7). Repeat until end float is less than 0.012". Check rotational torque by hand. The torque should be less than 2.2 lbs-inch.
15. Check that the gear backlash is between 0.006" and 0.016". You should not have to adjust the backlash.
16. Press in input oil seal (19), using tube of correct diameter. Be careful not to damage seal lip.
17. Press oil cap (20) on to cover the rear of housing, using a tube of the correct diameter.
18. Place top cover (22) on top of housing and secure with six cap screw (23).
19. Check gearbox housing for leaks by plugging all holes except one. Apply 4 psi compressed air and immerse the gearbox in water to verify that there are no leaks.
20. Remove gearbox from water and dry off with compressed air. Add SAE 80W or 90W EP oil until it runs out of side level hole. Tighten all plugs.

Reinstall Gearbox

NOTE: Gearbox is heavy: do not attempt to move without mechanical assistance.

1. Set gearbox on cutter and fasten with bolts and nuts. Torque bolts to 300 lbs-ft.
2. Attach crossbar (see **Crossbar Installation, page 26**).

CROSSBAR REMOVAL

1. It is necessary to gain access to bottom side of cutter for crossbar removal. See **BLOCKIiNG METHOD, page 17**.

   NOTE: You will need to use either the puller screw (Item 6, Figure 19) or a small hydraulic jack to remove the crossbar.
2. Remove blade pin hardware, blade pins and blades from crossbar.
3. Remove retaining wire from bottom of crossbar and remove nut and washer.
4. **Refer to Figure 19.** Attach clevis (1) to each end of crossbar, using blade pins, spacers, keyhole plates, and blade pin clips.
5. Position tube assembly (5) with threaded nut toward crossbar for puller screw removal or down for hydraulic jack removal.

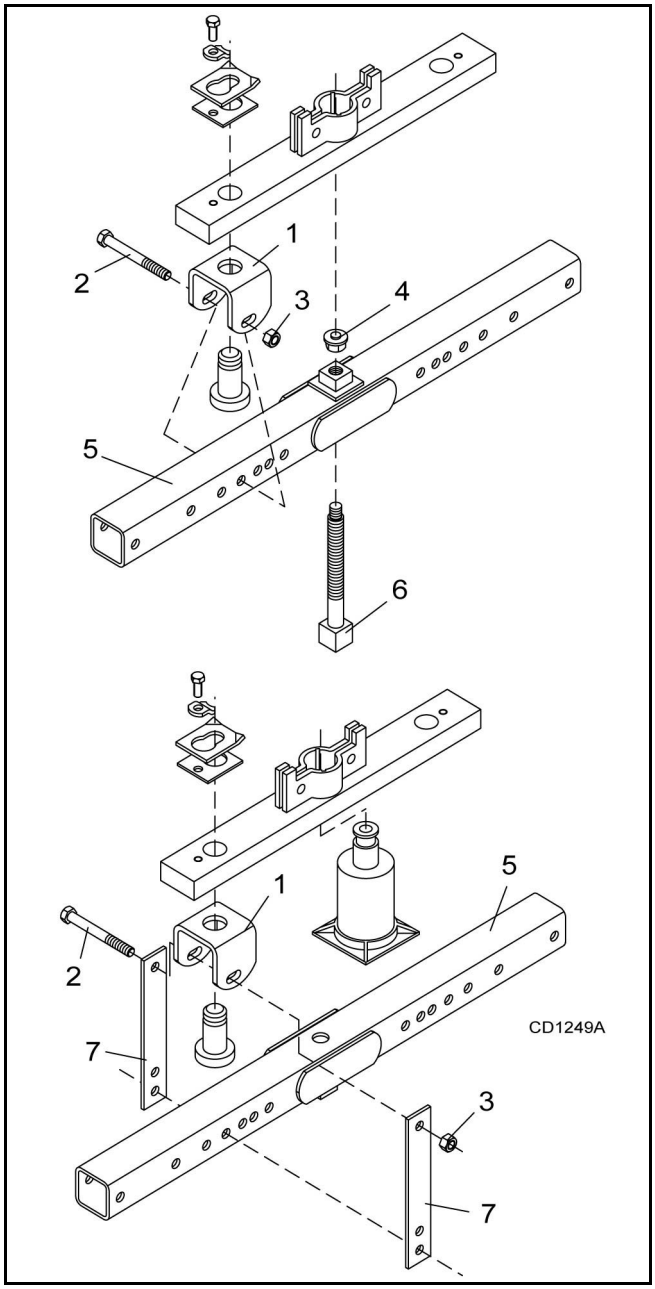


Figure 19. Crossbar Removal

6. For removal with puller screw, attach tube (5) to each clevis with bolts (2) and nuts (3). Place pad (4) in nut and thread puller screw (6) into nut from bottom. Tighten until pad is solid against gearbox shaft. For best results, strike head of puller screw with a hammer while tightening with a wrench.
7. For removal with a jack, attach tube to each clevis with puller links (7), bolts (2), and nuts (3). Place jack on tube with end of jack pressing against gearbox shaft. Slowly apply force with jack.

   NOTE: Hydraulic jack will not operate if tipped more than 90°. Use care to prevent bending crossbar during removal.

CROSSBAR INSTALLATION

Using emery cloth (220 or finer), remove surface rust, Loctite® and foreign material from hub, splined gearbox, vertical shaft, and crossbar as shown in Figure 20.

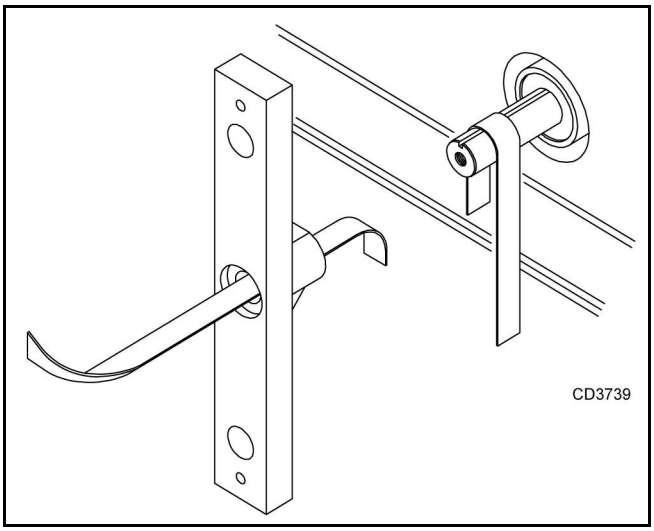


Figure 20. Example

Refer to Figure 21.

8. Install crossbar (2) on splined shaft. Install washer (5) and nut (3). Torque nut to 450 lbs-ft.

9. Install cotter pin (4) (supplied) through gearbox shaft and slots in nuts. Twist end of pin around nut (3).

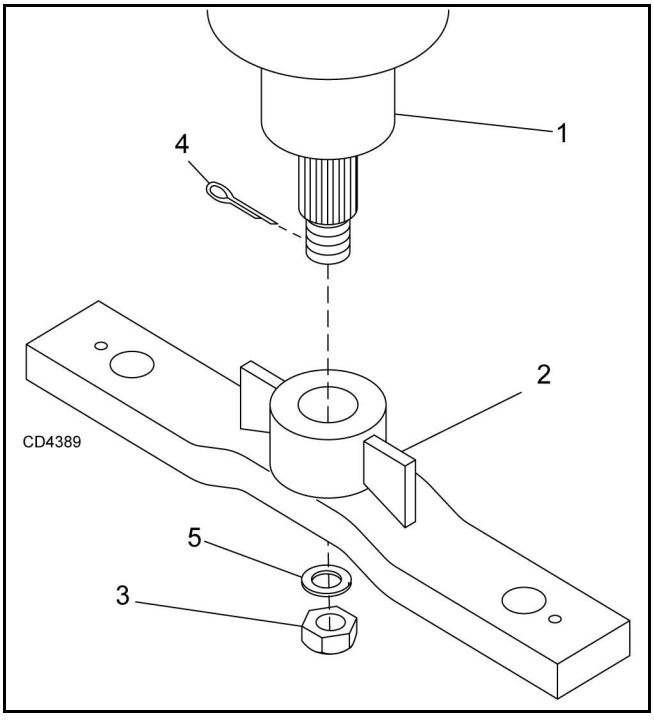


Figure 21. Example

UNIVERSAL JOINT REPAIR

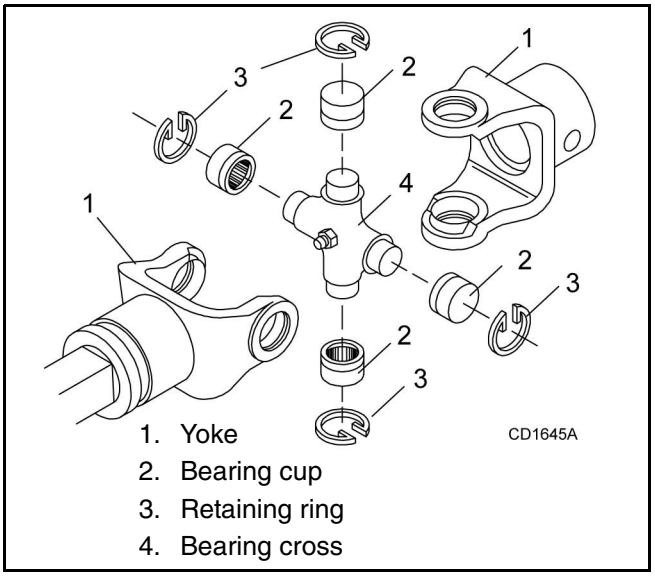


Figure 22. U-Joint Exploded View

U-Joint Disassembly

1. Remove external snap rings from yokes in four locations as shown in Figure 23.

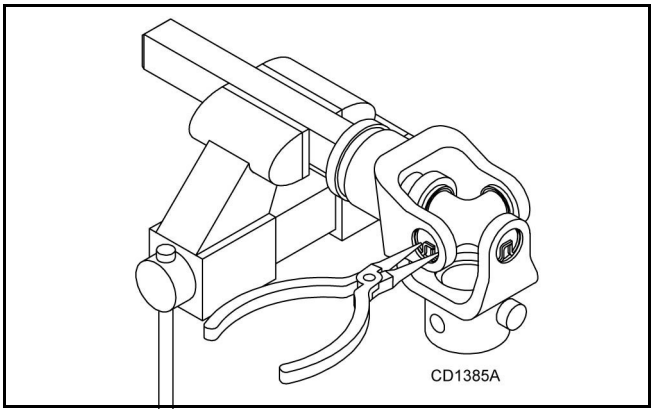


Figure 23. Remove Snap Ring

2. With snap rings removed, support drive in vise, hold yoke in hand and tap on yoke to drive cup up out of yoke. See Figure 24.

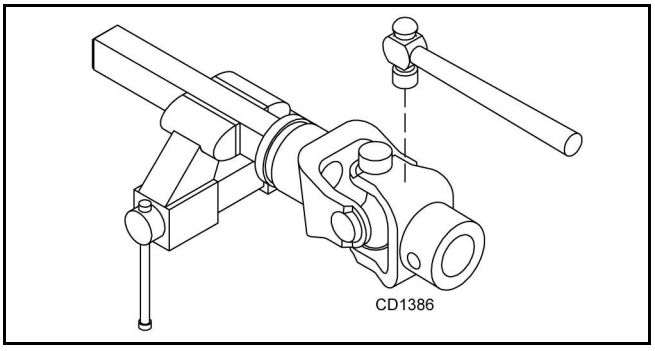


Figure 24. Remove Bearing Cups

3. Clamp cup in vise as shown in Figure 25 and tap on yoke to completely remove cup from yoke. Repeat Step 2 & 3 for opposite cup.

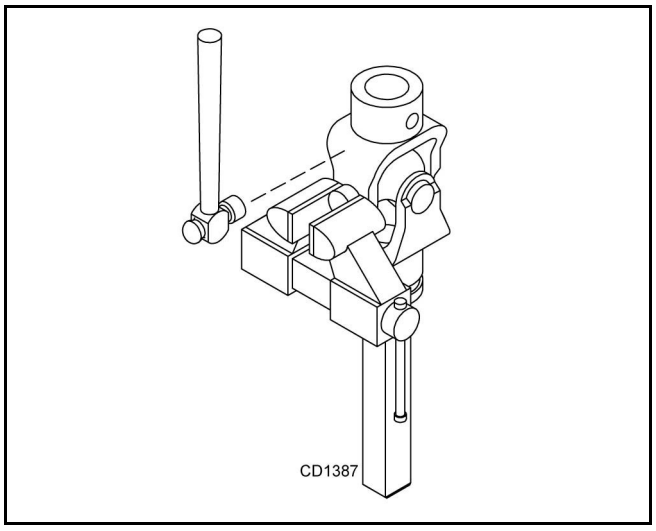


Figure 25. Remove Bearing Cups

4. Place universal cross in vise as shown in Figure 26 and tap on yoke to remove cup. Repeat Step 3 for final removal. Drive remaining cup out with a drift and hammer.

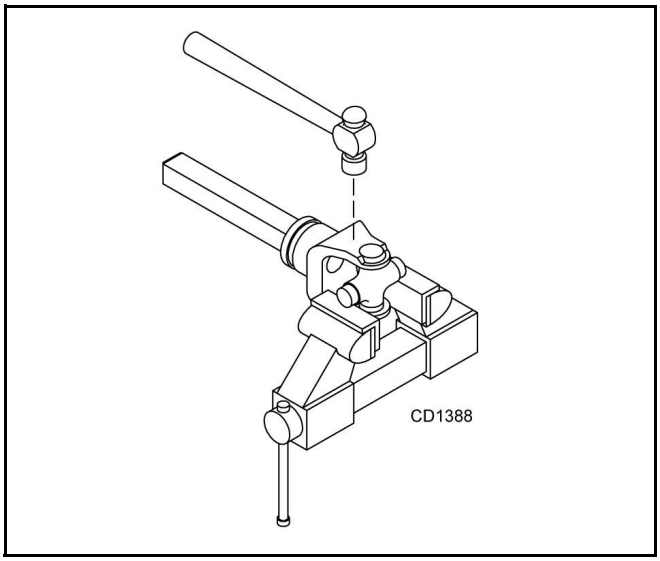


Figure 26. Remove Bearing Cups

U-Joint Assembly

1. Place seals securely on bearing cups. Insert cup into yoke from outside and press in with hand pressure as far as possible. Insert journal cross into bearing cup with grease fitting away from shaft. Be careful not to disturb needle bearings. Insert another bearing cup directly across from first cup and press in as far as possible with hand pressure.

   Trap cups in vise and apply pressure. Be sure journal cross is started into bearings and continue pressure with vise, squeezing in as far as possible. Tapping the yoke will help.
2. Seat cups by placing a drift or socket (slightly smaller than the cup) on cup and rap with a hammer. See Figure 27. Install snap ring and repeat on opposite cup.
3. Repeat Step 1 & Step 2 to install remaining cups in remaining yoke.
4. Move both yokes in all directions to check for free movement. If movement is restricted, rap on yokes sharply with a hammer to relieve any tension. Repeat until both yokes move in all directions without restriction.

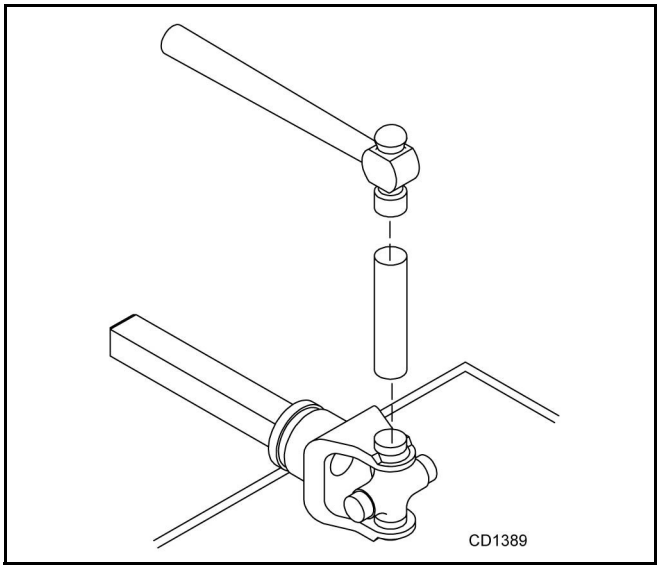


Figure 27. Install Bearing Cups

NOTES

ASSEMBLY

DEALER SET-UP INSTRUCTIONS

Assembly of this cutter is the responsibility of the Woods dealer. If should be delivered to the owner completely assembled, lubricated, and adjusted for normal cutting conditions.

Complete **Dealer Check Lists, page 34** when you have completed the assembly.

The cutter is shipped partially assembled. Assembly will be easier if aligned and loosely assembled before tightening hardware. Recommended torque values for hardware are located in the Bolt Torque Chart, page 45.

⚠ DANGER

■ **Full chain, rubber, or steel band shielding must be installed when operating in populated areas or other areas where thrown objects could injure people or damage property.**

- **If this machine is not equipped with full chain, rubber, or steel band shielding, operation must be stopped when anyone comes within 300 feet (92 m).**
- **This shielding is designed to reduce the risk of thrown objects. The mower deck and protective devices cannot prevent all objects from escaping the blade enclosure in every mowing condition. It is possible for objects to ricochet and escape, traveling as much as 300 feet (92 m).**

⚠ WARNING

■ **Make sure spring-activated locking pin or collar slides freely and is seated firmly in tractor PTO spline groove.**

■ **Operate tractor PTO at 540 RPM. Do not exceed.**

⚠ CAUTION

■ **Always wear relatively tight and belted clothing to avoid getting caught in moving parts. Wear sturdy, rough-soled work shoes and protective equipment for eyes, hair, hands, hearing, and head; and respirator or filter mask where appropriate.**

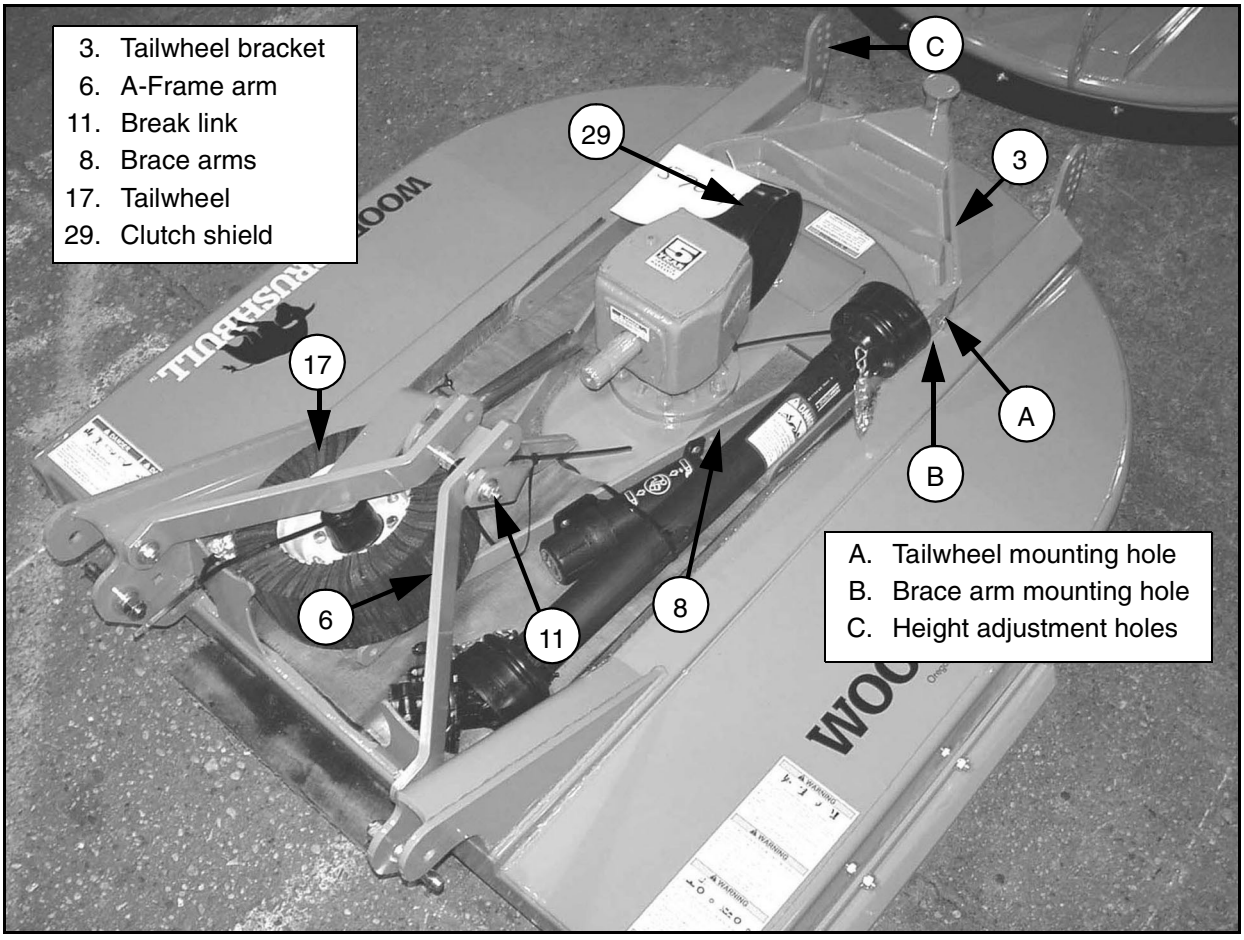


Figure 29. Shipping Configuration

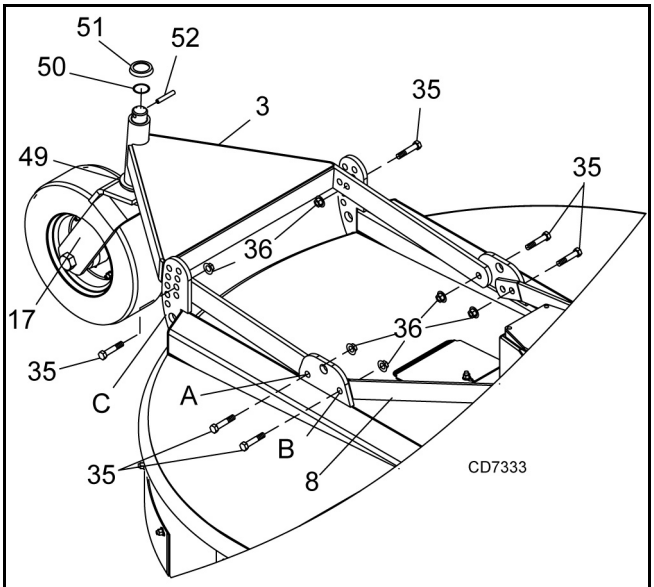
Disassemble Shipping Unit

Refer to Figure 29.

1. Position cutter flat and place a block underneath the rear of the cutter to raise it off the ground.
2. Remove all parts that are wired or strapped to cutter. Remove parts from manual tube and hardware that is securing tailwheel bracket (3) and brace arms (8) to cutter.

ASSEMBLE CUTTER

Install Tailwheel



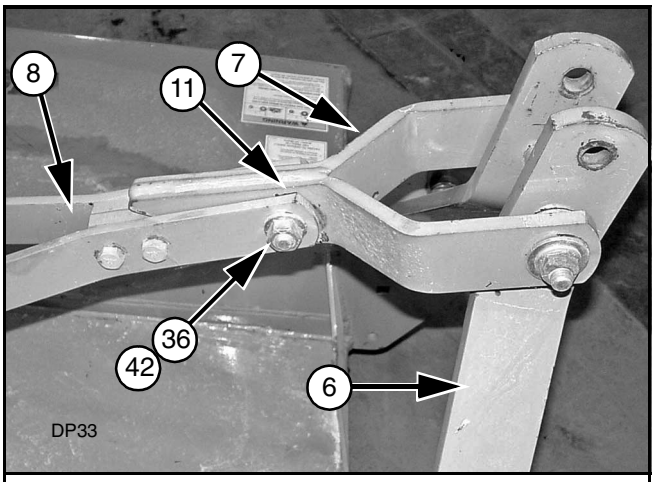
A. Tailwheel pivot hole
B. Brace arm mounting hole
C. Height adjustment holes
3. Tailwheel bracket
8. Brace arms
17. Tailwheel assembly
35. 5/8 NC x 2 Cap screw
36. 5/8 NC Flange lock nut
49. Washer, .18 x 1.62 x 3
50. O-Ring
51. Washer
52. Spiral pin 3/8 x 2

Figure 30. Tailwheel Installation

1. Attach tailwheel bracket (3) to cutter at the tailwheel pivot holes (A) using cap screws (35) and flange lock nuts (36).
2. Select desired height adjustment holes (C), and secure tailwheel bracket with cap screws (35) and flange lock nuts (35). Cutting height adjustment will be necessary when cutter is fully assembled. See “Cutting Height Adjustment” on page 15.
3. Raise rear of cutter and insert tailwheel assembly (17) with two washers (49) into tailwheel bracket (3). Secure with o-ring (50), washer (51), and spiral pin (52).
4. Place diagonal brace bars (4) on the inside of frame rails and attach to diagonal brace mounting holes (A). Secure using cap screws (13) and flange lock nuts (14).

Connect A-Frame Arms

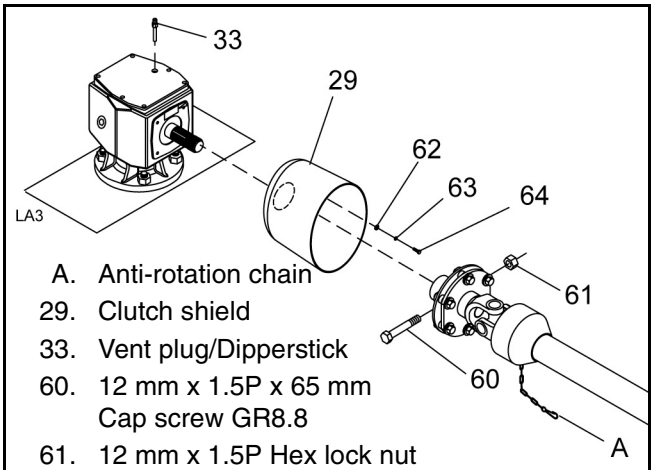
1. Rotate A-frame arms (6) and break link (7) forward and up.
2. Attach brace arms (8) to the break link (8) using cap screw (42), sleeve (11), and flange lock nut (36). See Figure 31.



6. A-Frame arms
7. Break link
8. Brace arms
11. Sleeve, .628 x 1.0 x 1.25
36. 5/8 NC Flange lock nut
42. 5/8 NC x 2-3/4 HHCS GR5

Figure 31. Brace Arm Connection

Install Slip Clutch Driveline



A. Anti-rotation chain
29. Clutch shield
33. Vent plug/Dipperstick
60. 12 mm x 1.5P x 65 mm Cap screw GR8.8
61. 12 mm x 1.5P Hex lock nut
62. 5/16 Flat washer
63. 5/16 Lock washer
64. M8 x 1.25P x 20 mm HHCS

Figure 32. Slip Clutch Driveline Assembly

A new slip clutch, or one that has been in storage over the winter, may seize.

NOTICE

■ **A grade 8.8 metric bolt must be used to attach clutch driveline to gearbox.**

1. Before operating slip clutch, make sure it will slip. Refer to SLIP CLUTCH ADJUSTMENT, page 18.
2. Place the shield (29) against gearbox and secure using four cap screws (64), lock washers (63) and flat washers (62). Torque bolts (64) to 12 lbs-ft.
3. Install driveline onto gearbox input shaft and secure with bolts (1) and nuts (2).

INSTALL SAFETY SHIELDING

Install Optional Chain Shielding

⚠ DANGER

■ **Full chain, rubber, or steel band shielding must be installed when operating in populated areas or other areas where thrown objects could injure people or damage property.**

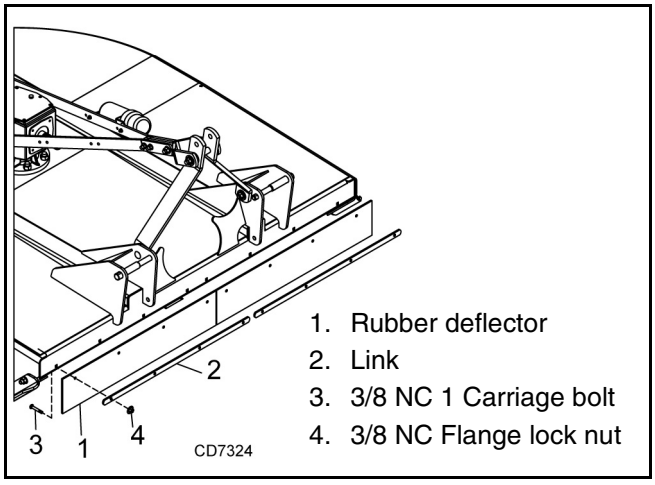
- **If this machine is not equipped with full chain, rubber, or steel band shielding, operation must be stopped when anyone comes within 300 feet (92 m).**
- **This shielding is designed to reduce the risk of thrown objects. The mower deck and protective devices cannot prevent all objects from escaping the blade enclosure in every mowing condition. It is possible for objects to ricochet and escape, traveling as much as 300 feet (92 m).**

The optional chain shielding assemblies are ready for installation when you receive them.

1. Refer to **Front & Rear Chain Shielding, page 42** and attach as shown by inserting the bolts from inside the cutter frame out through the shielding.
2. Install hardware as shown in the parts drawing.

Install Rubber Deflector

1. Attach rubber deflector (1) and link (2) to front of cutter using carriage bolts (3) and flange lock nuts (4).
2. Insert bolts from inside the cutter frame out through the shielding.



1. Rubber deflector
2. Link
3. 3/8 NC 1 Carriage bolt
4. 3/8 NC Flange lock nut

Figure 33. Rubber Deflector Installation

FILL GEARBOX

NOTICE

■ **Gearbox is not filled at the factory. Prior to delivery to customer, make sure gearbox is filled only half-full with 80W or 90W API GL-4 or GL-5 gear lube. Use side hole to remove any excess oil.**

1. Remove vent plug/dipperstick (9) on top of gearbox and plug on side of gearbox. Use 5/16" allen wrench to remove plug.
2. Make sure vent plug hole is clear.
3. Fill gearbox until oil runs out the side hole on gearbox. Use a high quality gear oil with a viscosity index of 80W or 90W and an API service rating of GL-4 or GL-5.
4. Install side plug and vent plug.

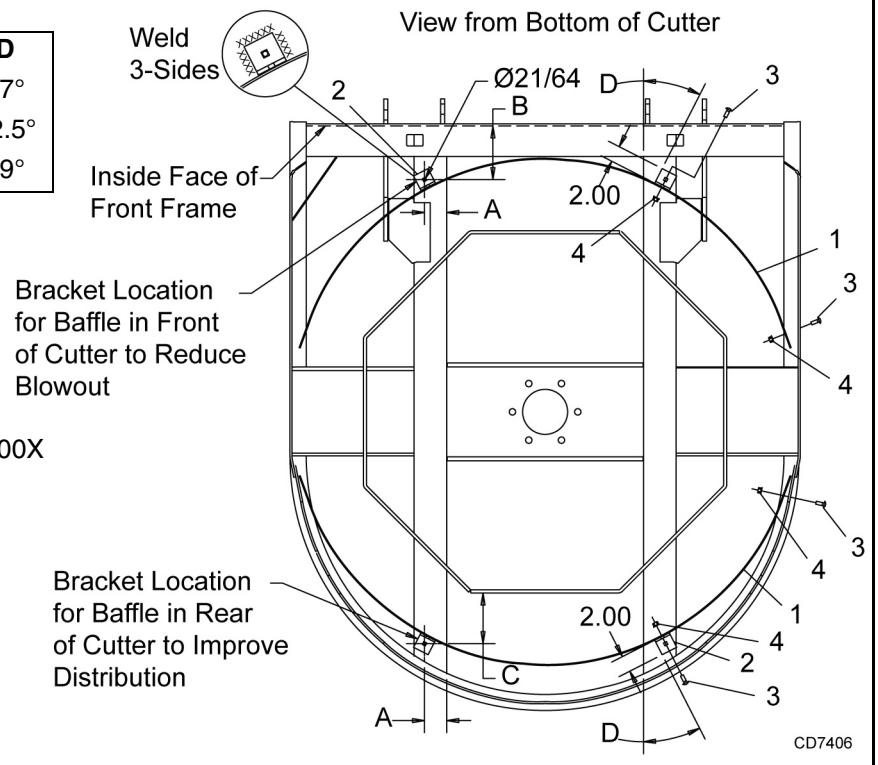
BAFFLE KIT INSTALLATION (OPTIONAL)

NOTE: An optional baffle kit may be installed to the front of the cutter to prevent excessive blow-out when cutter is used on a non-cab tractor. The baffle can also be installed in the rear of the cutter to spread out discharge.

1. From the bottom of the cutter, drill two 21/64" holes in the rectangular tubes using dimensions A, B and C from chart in Figure 34. Drill holes in either front or rear of cutter.
2. Attach L-shaped mounting brackets (2) to the bottom of the deck using self-tapping screws (5).
3. Place baffle (1) against mounting brackets (2) and secure using two carriage bolts (3) and flange lock nuts (4).
4. Baffles located in the front of cutter: Push end of baffle against cutter side frame drill hole through side frame using hole in baffle as a guide. Secure baffle to side frame using carriage bolts (3) and flange lock nuts (4).
5. Baffle located in the rear of cutter: Secure baffle to side frame using carriage bolts (3) and flange lock nuts (4).

   NOTE: Mounting brackets must be welded to the deck, screws alone will not be enough to hold mounting brackets in place.
6. Weld mounting brackets to bottom of deck. Weld solid on three sides.

Model	A	B	C	D
BB6000X	2.72"	6.56"	6.22"	27°
BB7200X	2.45"	5.99"	8.32"	22.5°
BB8400X	2.32"	5.23"	10.55"	19°



1. Baffle kit, BB6000X, BB7200X, BB8400X
2. Mounting bracket
3. 3/8 NC x 1 Carriage bolt GR5
4. 3/8 NC Flange lock nut

Figure 34. Baffle Installation

DUAL TAILWHEEL INSTALLATION (OPTIONAL)

1. Attach dual tailwheel (1) to main frame (D) using position A and desired height location as shown in Figure 35.
2. Secure with cap screws (17) and hex nuts (18).
3. Torque hardware to 175 lbs-ft.

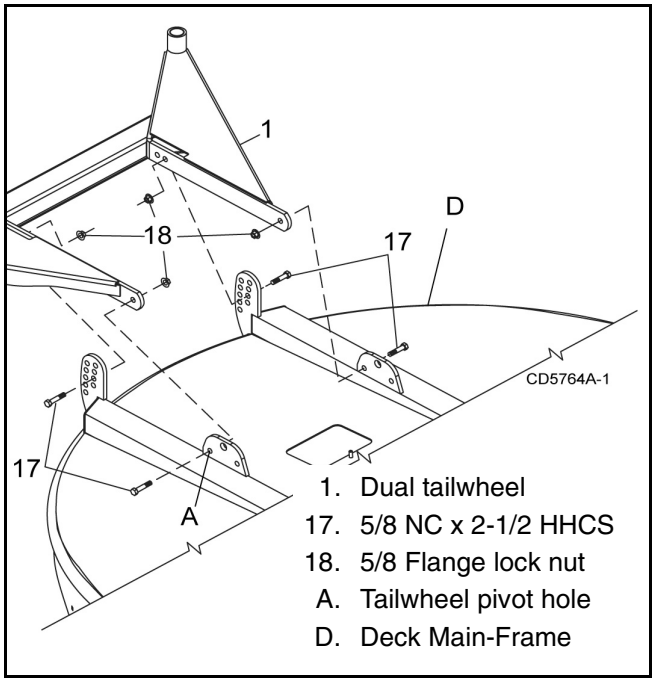


Figure 35. Dual Tailwheel Installation

CHECK CHAIN INSTALLATION (OPTIONAL)

Check chains are used to carry the front of cutter at a set height. See Figure 36.

1. Thread check chains (3) through check chain bracket (2).
2. Attach lower end of check chain (3) to mast plate (9) with bolt (6), washer (7), and nut (8).
3. Attach keyhole brackets (2) to each side of tractor top link bracket (10) with bolt (4) and nut (5).

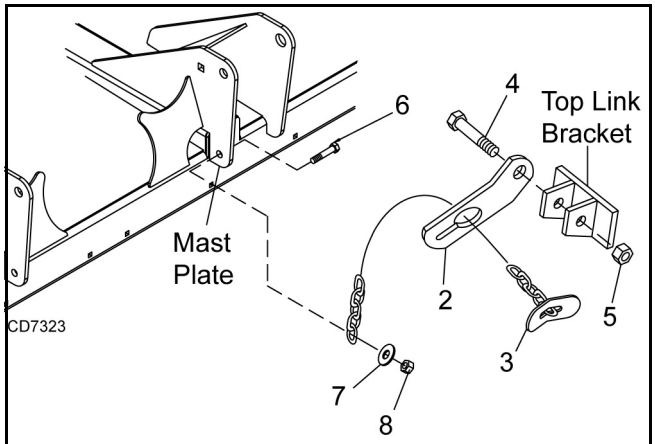


Figure 36. Optional Check Chain Assembly

DEALER CHECK LISTS

PRE-DELIVERY CHECK LIST
(DEALER'S RESPONSIBILITY)

NOTICE

■ **Gearbox was not filled at the factory. It must be serviced before operating cutter. (See Fill Gearbox, page 31). Failure to service will result in damage to gearbox.**

Inspect cutter thoroughly after assembly to make sure it is set up properly before delivering it to the customer. The following check list is a reminder of points to inspect. Check off each item as it is found satisfactory, corrections are made, or services are performed.

___ Check all bolts to be sure they are properly torqued.

___ Check that all cotter pins are properly installed and secured.

___ Check that PTO shaft is properly installed.

___ Check that gearbox is properly serviced and seals are not leaking.

___ Check and grease all lubrication points as identified in**, Lubrication Information, page 17**.

___ Check that blades have been properly installed.

DELIVERY CHECK
(DEALER'S RESPONSIBILITY)

___ Show customer how to make adjustments. Describe the options available for this cutter and explain their purpose.

___ Explain importance of lubrication to customer and point out lubrication points on cutter.

___ Present Operator's Manual and request that customer and all operators read it before operating equipment. Point out the manual safety rules, explain their meanings and emphasize the increased safety hazards that exist when safety rules are not followed.

___ Point out all guards and shielding. Explain their importance and the safety hazards that exist when not kept in place and in good condition.

___ For mounted units, add wheel weights, ballast in front tires, and/or front tractor weight to enhance front end stability. A minimum 20% of tractor and equipment gross weight must be on front tractor wheels. When adding weight to attain 20% of tractor and equipment weight on front tractor wheels, you must not exceed the ROPS weight certification. Weigh the tractor and equipment. Do not estimate!

___ Explain to customer that when equipment is transported on a road or highway, safety devices should be used to give adequate warning to operators of other vehicles.

WOODS

PARTS INDEX

BRUSHBULL™ Rotary Cutters BB6000X, BB7200X, BB8400X

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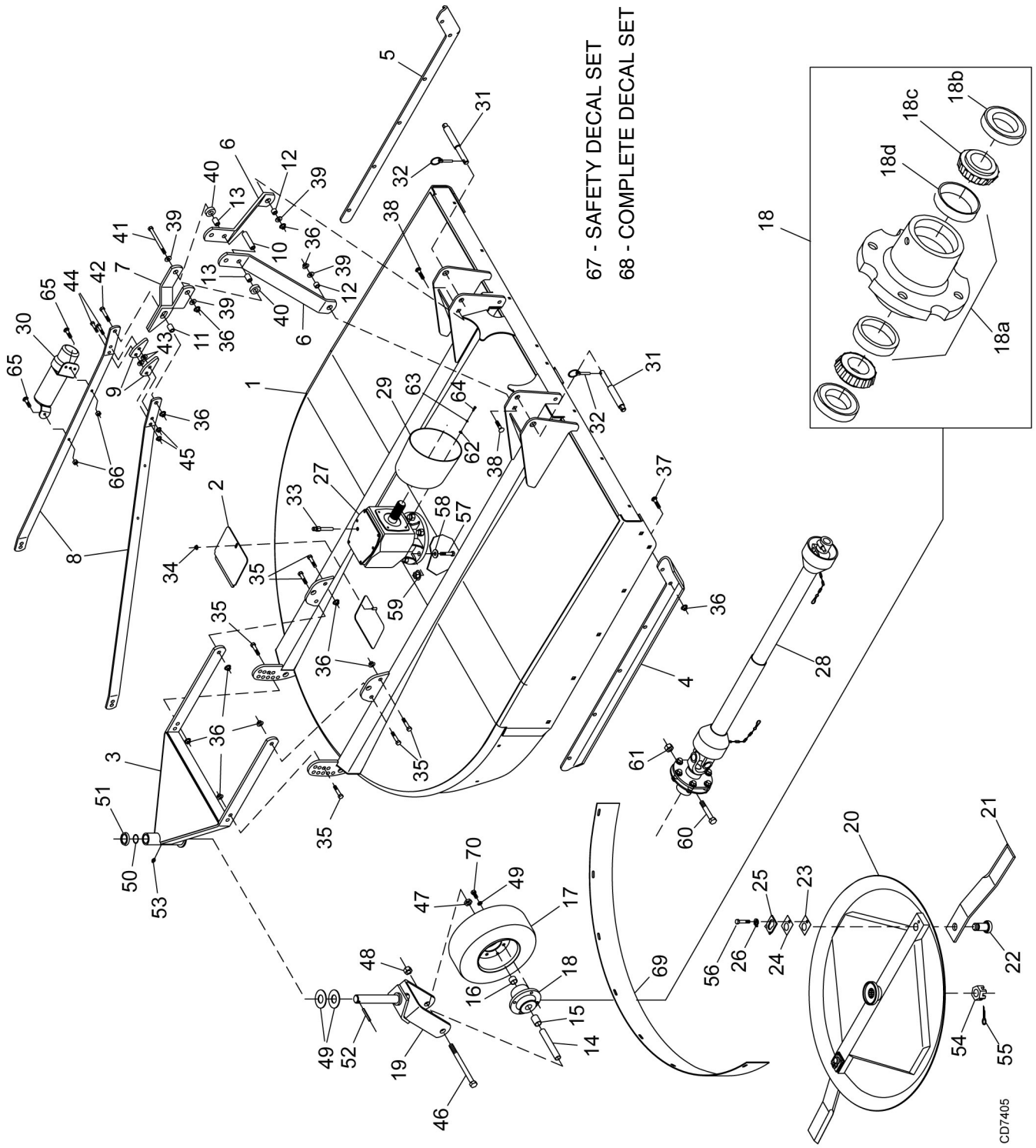
BB6000X, BB7200X & BB8400X ASSEMBLY

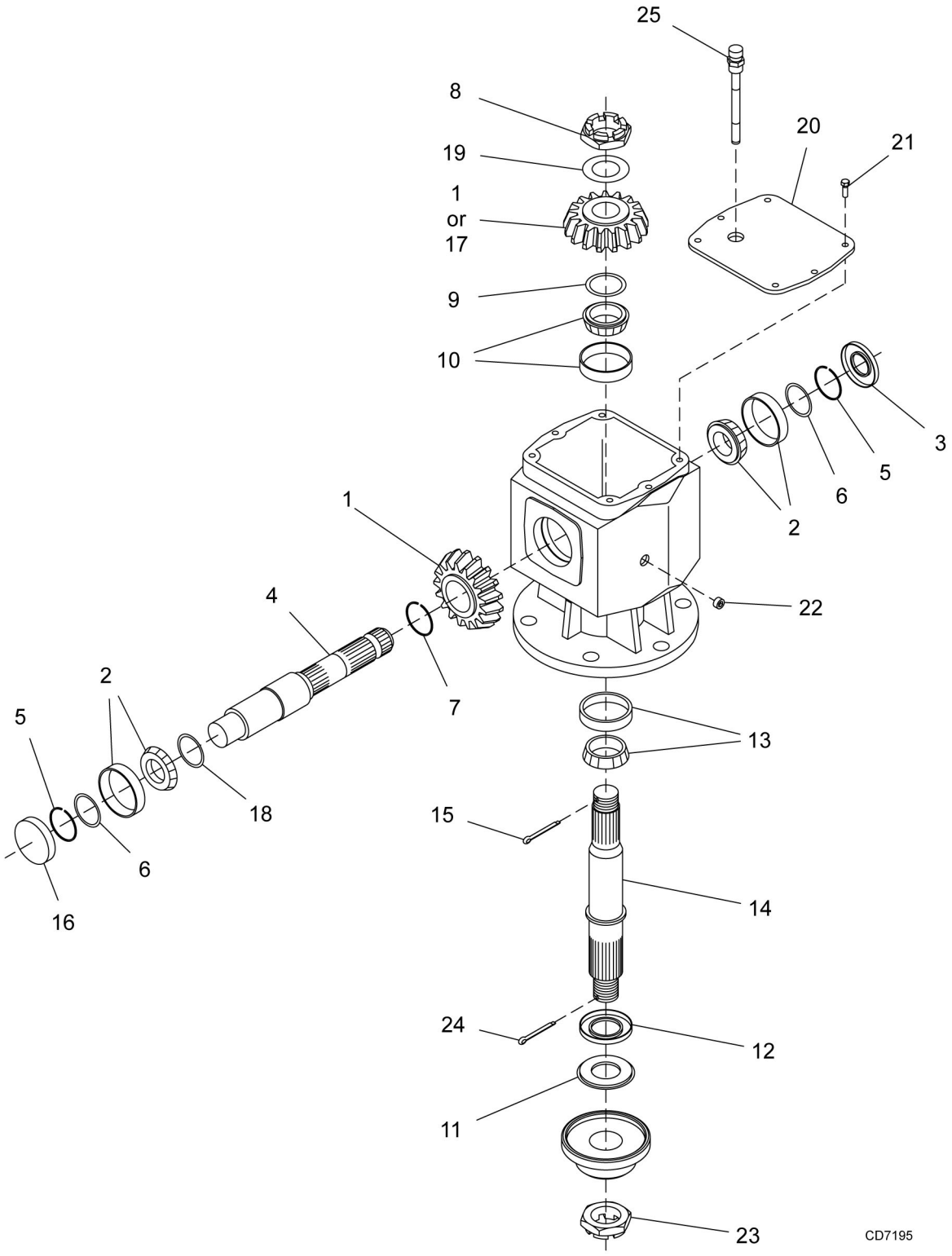


BB6000X, BB7200X & BB8400X PARTS LIST

REF	PART	QTY	DESCRIPTION
1	-----	1	Deck Weldment
2	57050	1	Blade Access Cover
3	57040	1	Tailwheel Weldment
4	57118	1	Right Skid - **BB6000X**
4	57048	1	Right Skid - **BB7200X**
4	57078	1	Right Skid - **BB8400X**
5	57119	1	Left Skid - **BB6000X**
5	57049	1	Left Skid - **BB7200X**
5	57079	1	Left Skid - **BB8400X**
6	57134	2	A-Frame Arm - **BB6000X, BB7200X**
6	1024631	2	A-Frame Arm - **BB8400X**
7	57130	1	Break Link
8	57135	2	Lift Arm - **BB6000X**
8	57136	2	Lift Arm - **BB7200X**
8	1002047	2	Lift Arm - **BB8400X**
9	57133	2	Link, .50 x 2.0 x 4.48
10	57095	1	Sleeve, .64 x 1.0 x 2.6 **BB6000X, BB7200X**
10	1001520	1	Sleeve, .64 x 1.0 x 2.33 - **BB8400X**
11	66661	1	Sleeve, .628 x 1.0 x 1.25
12	67222	2	Sleeve, 5/8 x 1 x 43/64 **BB6000X, BB7200X**
12	12313	2	Sleeve, 5/8 x 1 x 13/16 **BB8400X**
13	1001519	2	Sleeve, 5/8 x 1 x 1
14	15573	1	Sleeve, 1.0ID x 1.25OD x 5.81
15	15575	1	Sleeve, 1.25ID x 1.5OD x 1.86
16	15574	1	Sleeve, 1.25ID x 1.5OD x .903
17	12577	1	4 x 8 Tire w/ Rim, 5" wide
18	15277	1	Wheel Hub Assembly (includes 18b, 18c & 18d)
18a	15591	1	Wheel hub w/cups (includes 18d)
18b	314	2	Seal for 1-1/2 shaft
18c	310	2	Bearing cone
18d	309	2	Bearing cup
19	15580	1	Tailwheel Clevis Weldment
20	1024136	1	Crossbar Assembly **BB6000X, BB7200X**
20	1024139	1	Crossbar Assembly - **BB8400X**
21	57099KT	1	Blade Kit - **BB6000X**
21	1003675KT	1	Blade Kit, Flat - **BB6000X**
21	19160KT	1	Blade Kit - **BB7200X, BB8400X**
21	19162KT	1	Blade Kit, Flat - **BB7200X, BB8400X**
22	32616	2	Blade pin
23	10520	2	18 GA 1-1/2 Blade pin shim
24	13946	2	20 GA 1-1/2 Blade pin shim
25	32603	2	Keyhole plate
26	32604	2	Blade pin lock clip
27	-----	1	Gearbox (see page 38)
28	57419	1	Driveline - **BB6000X**
28	57422	1	Driveline - **BB7200X, BB8400X**
29	1002048	1	Clutch Shield
30	1003828	1	Manual Tube
31	1026542	2	Hitch Pin, Cat 1 & 2 - **BB6000X, BB7200X** -or-
31	39064	2	Hitch Pin, Cat 2 & 3 - **BB8400X**
32	35124	2	7/16 x 2 Klik pin
33	57312	1	Dipstick
34	14350 *		3/8 NC Flange lock nut
35	902 *		5/8 NC x 2 HHCS GR5
36	19025 *		5/8 NC Flanged lock nut
37	5607 *		5/8 NC x 1-1/2 Carriage bolt GR5
38	2855 *		5/8 NC x 2 Carriage bolt GR5 - **BB6000X, BB7200X**
38	5836 *		5/8 NC x 2-1/2 Carriage bolt GR5 - **BB8400X**
39	692 *		5/8 Flat washer
40	57096		Washer, 1.03 x 2.0 x .38
41	23638 *		5/8 NC x 7 HHCS GR5
42	986 *		5/8 NC x 2-3/4 HHCS GR5
43	854 *		1/2 Flat washer
44	5621 *		1/2 NC x 2-3/4 HHCS GR5
45	11900 *		1/2 NC Flanged lock nut
46	15087		1 NC x 9.0 HHCS GR5
47	1386		1 NC Jam nut
48	34279 *		1 NC Lock nut
49	2370		Washer, 1.62 x 3 x .18
50	12889		O-Ring, 3/32 x 1-9/16 OD
51	12881		Washer cap
52	4674		3/8 x 2 Spirol pin
53	12296 *		1/4 - 28 Grease fitting
54	57308		M36 x 3 Castle nut
55	6185 *		1/4 x 2-1/4 Cotter pin
56	6100 *		1/2 NC x 1-1/4 HHCS GR5
57	30068 *		3/4 NC x 2-1/2 HHCS GR5
58	57798		3/4 Hardened flat washer
59	302207		3/4 NC Flange lock nut
60	57262		12mm x 1.75P x 65mm HHCS
61	57261		12mm x 1.75P Hex lock nut
62	35155 *		5/16 Flat washer
63	2472 *		5/16 Lock washer
64	24801 *		M8 x 1.25 x 20mm HHCS
65	24409 *		5/16 NC x 1 Carriage bolt
66	4529 *		5/16 NC Hex nut
67	15358	1	Safety decal set
68	1000622	1	Complete decal set
69	57122	1	Rear Band - **BB6000X**
69	57046	1	Rear Band - **BB7200X**
69	57084	1	Rear Band - **BB8400X**
70	4119		1/2 NF x 1 HHCS GR5
71	57353 †	2	5-Ft Heavy-duty skid, right or left (optional) **-or-**
71	57327 †	2	6-Ft Heavy-duty skid, right or left (optional) **-or-**
71	57306 †	2	7-Ft Heavy-duty skid, right or left (optional)

HHCS Hex Head Cap Screw
* Standard hardware, obtain locally
† Not Shown

GEARBOX ASSEMBLY



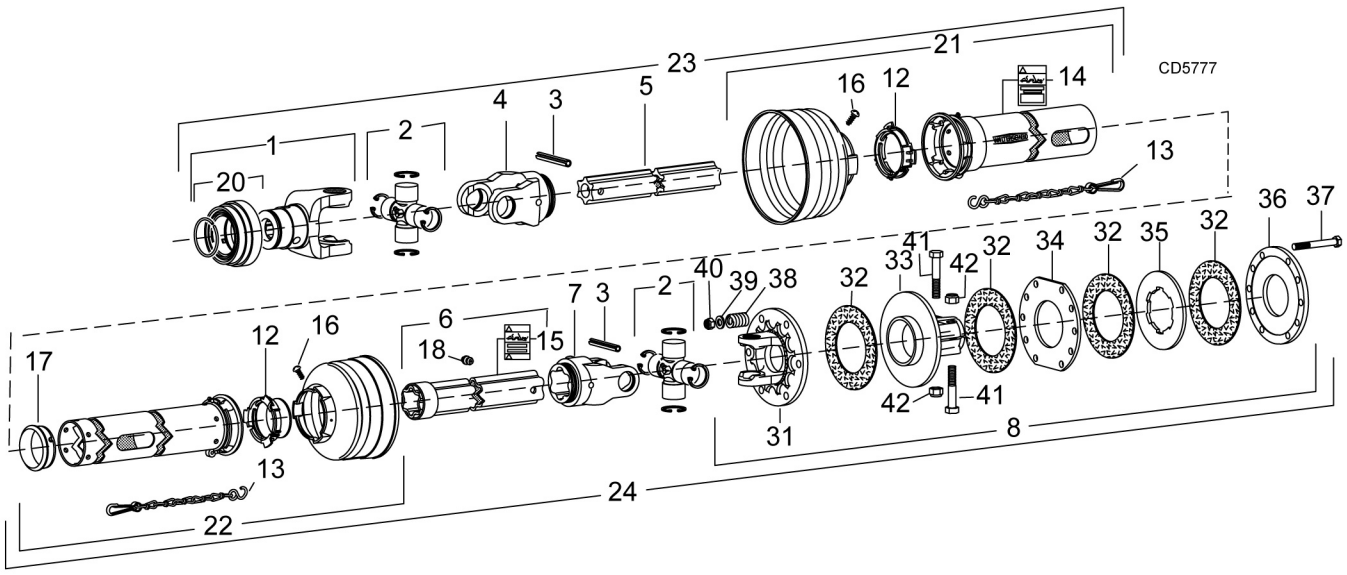
GEARBOX ASSEMBLY PARTS LIST

REF	PART	QTY	DESCRIPTION
A	58807	1	Complete Gearbox assembly - **BB6000X**
A	58808	1	Complete Gearbox assembly - **BB7200X**
A	1024795	1	Complete Gearbox assembly - **BB8400X**
1	57445	1	Gear crown 24T M7.25 - **BB6000X**
1	57446	1	Gear crown 22T M8.0 - **BB7200X**
1	1025617	2	Gear crown 21T M7.8 - **BB8400X**
2	39411	2	Bearing, cup & cone
3	57318	1	Oil seal 45 x 85 x 10
4	57450	1	Input shaft
5	57320	2	Snap ring, 85 x 88.5 x 3
6	57471	2	Shim 70.3 x 84.7 (57471 kit)
7	57321	1	Snap ring, 50 x 47 x 2
8	57329	1	Castle nut M40 x 1.5
9	57471	1	Shim 5033 x 70.3 (57471 kit)
10	39263	1	Bearing, cup & cone
11	57451	1	Seal protector
12	57452	1	Dust lip 60 x 110 x 10 - **BB6000X, BB7200X**
12	1025612	1	Dust lip 60 x 110 x 12 - **BB8400X**
13	57453	1	Bearing, cup & cone
14	57454	1	Output shaft
15	-----	*	B5 x 60 Cotter pin
16	57371	1	Oil cap 80 x 10
17	57455	1	Gear pinion 15T M7.25 - **BB6000X**
17	57447	1	Gear pinion 16T M8.0 - **BB7200X**
18	57456	1	Shim 45.3 x 65.3 x 2.5
19	57471	1	Shim 40.3 x 61.7 (57471 kit)
20	57457	1	Cover - **BB6000X, BB7200X**
20	1025613	1	Cover - **BB8400X**
21	-----	*	M10 x 14 GR8.8 HHCS - **BB6000X, BB7200X**
21	-----	*	M8 x 25 GR8.8 HHCS - **BB8400X**
22	27326	*	3/8 NPT Solid plug
23	57308	1	Castle nut M36 x 3
24	6185	*	1/4 x 2-1/4 Cotter pin
25	57312	1	Dipstick

HHCS Hex Head Cap Screw

* Standard hardware, obtain locally

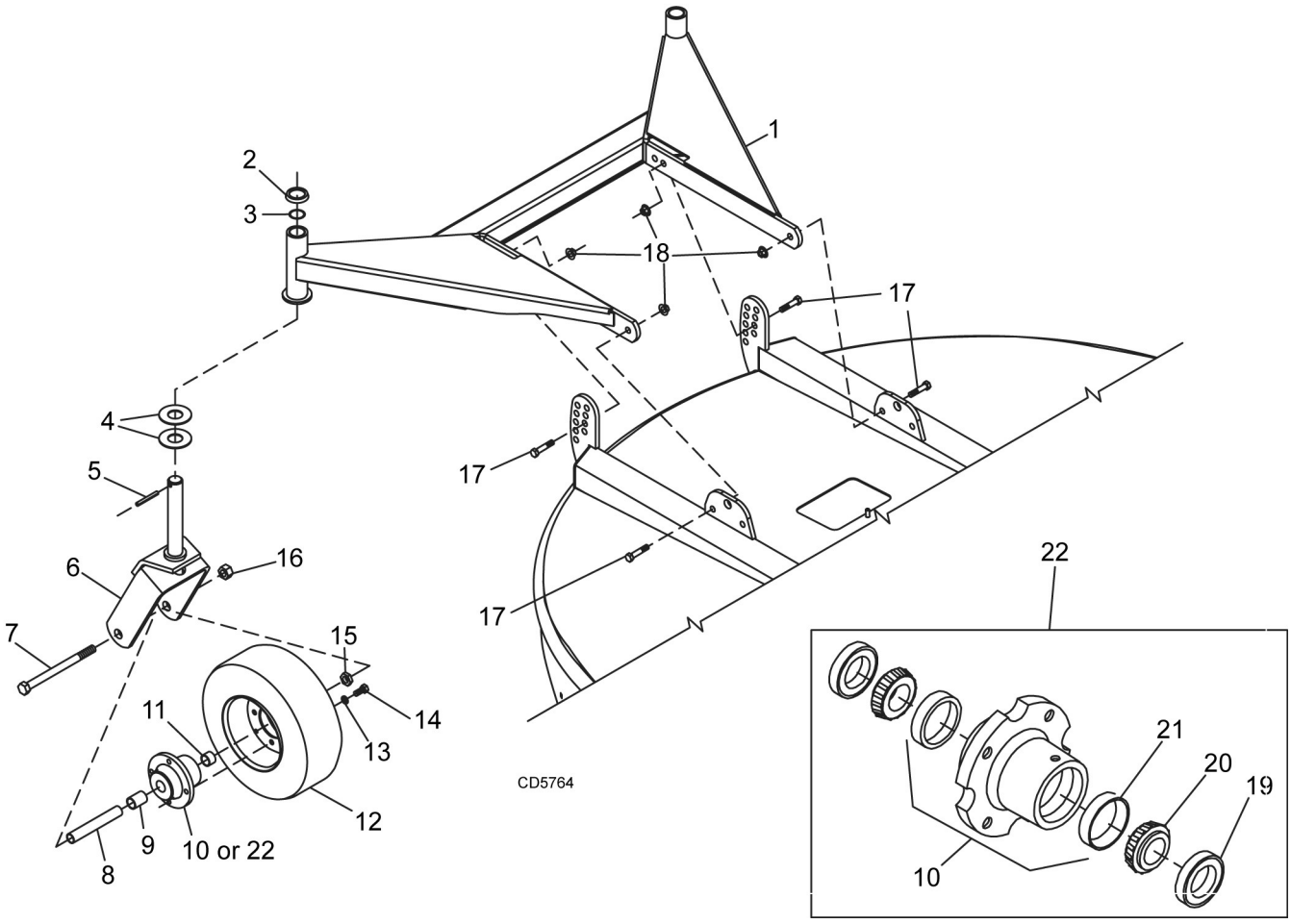
SLIP CLUTCH DRIVE ASSEMBLY



REF	PART	QTY	DESCRIPTION
A	57419	1	Complete 540 RPM drive assembly **BB6000X**
A	57422	1	Complete 540 RPM drive assembly **BB7200X, BB8400X**
1	40563	1	Yoke, 1-3/8 - 6 Spline ASG
2	40566	2	Cross and bearing
3	40765	2	Spring pin 10 X 90 mm
4	40750	1	Inboard yoke S4
5	40752	1	Inner profile S4
6	44676	1	Outer profile & sleeve S5
7	40751	1	Inboard yoke S5
8	57421	1	Friction clutch 1340, 1-3/4, 20 spline
12	40766	2	Bearing ring SC25
13	40777	2	Anti-rotation chain
14	18864	1	Decal, danger rotating driveline
15	33347	1	Decal, danger guard missing
16	40778	2	Screw
17	40767	1	Support bearing
18	40779	1	Grease fitting
20	40758	1	Slide lock collar repair kit
21	40727	1	Outer guard half **BB6000X**

REF	PART	QTY	DESCRIPTION
21	57270	1	Outer guard half **BB7200X, BB8400X**
22	57273	1	Inner guard half **BB6000X**
22	57271	1	Inner guard half **BB7200X, BB8400X**
23	40754	1	Male drive half, complete **BB6000X**
23	57423	1	Male drive half, complete **BB7200X, BB8400X**
24	57420	1	Female drive half, complete **BB6000X**
24	57424	1	Female drive half, complete **BB7200X, BB8400X**
31	57441	1	Flange yoke
32	57432	4	Friction disc
33	57442	1	Hub 1-3/4 - 20 I.C. -SN
34	57443	1	Drive plate
35	57256	1	Drive plate - SN
36	57257	1	Thrust plate
37	57263	6	M12 x 115 mm Hex head cap screw
38	57258	6	Spring
39	57265	6	Flat washer
40	57264	6	M12 Hex nut
41	57262	2	M12 x 65 mm Hex head cap screw
42	57261	2	M12 Hex nut

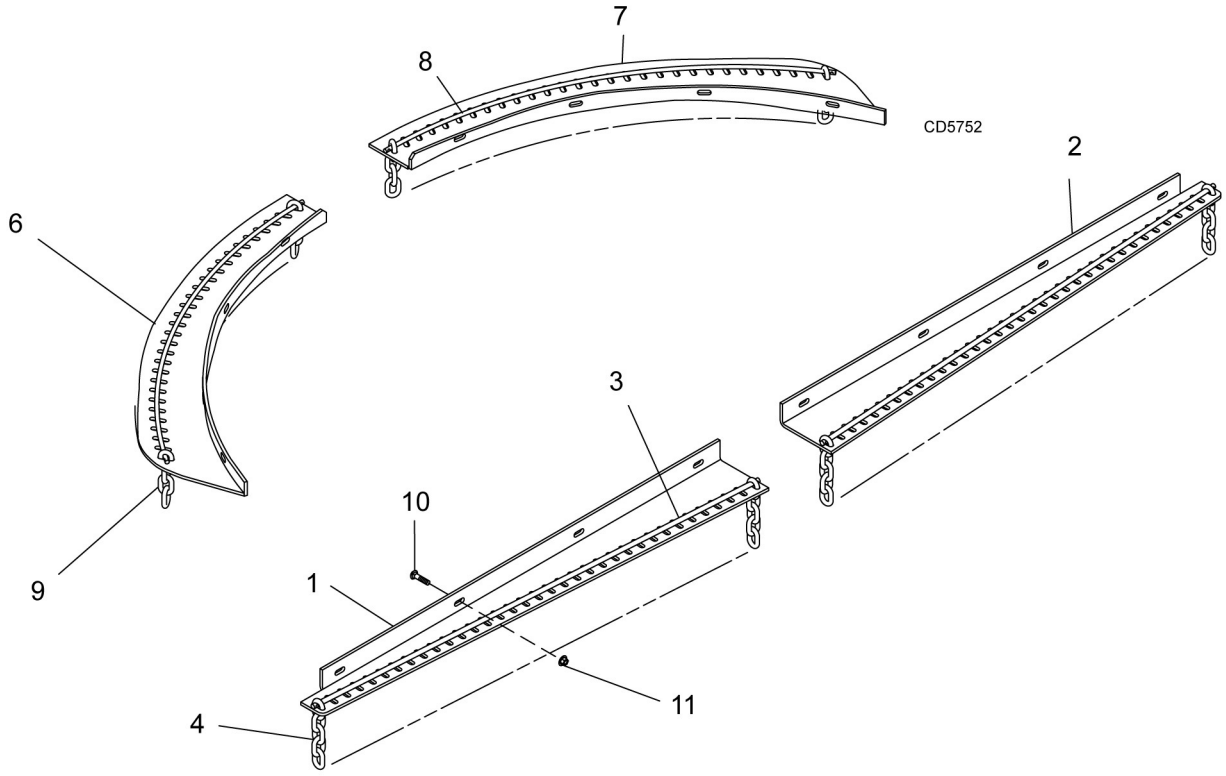
BB8400X DUAL TAILWHEEL (OPTIONAL)



REF	PART	QTY	DESCRIPTION
1	57101	1	Dual tailwheel assembly
2	12881	2	Washer T160 etc w/cap
3	12889	2	3/32 x 1-9/16 OD O-ring
4	2370	4	Washer, 1.62 x 3 x .18
5	4674*	2	3/8 x 2 Spirol pin
6	15580	2	Tailwheel clevis
7	15087	2	1 NC x 9.0 HHCS GR5
8	15573	2	Sleeve, 1.0 ID x 1.25 OD x 5.81
9	15575	2	Sleeve, 1.25 ID x 1.50 OD x 1.86
10	15591	2	Wheel hub assembly (includes item 21)
11	15574	2	Sleeve, 1.25 ID x 1.50 OD x .903
12	12577	2	4 x 8 Tire w/rim 5" wide
13	855*	8	1/2 Lock washer

REF	PART	QTY	DESCRIPTION
14	4119*	8	1/2 NF x 1 HHCS GR5
15	1386	2	1" NC Jam nut
16	34279	2	1" NC Lock nut
17	11854*	4	5/8 NC x 2-1/2 HHCS GR8
18	19025	4	5/8 NC Flange lock nut
19	314	2	Seal for 1-1/2 shaft
20	310	2	Bearing cone
21	309	2	Bearing cup
22	15277	2	Wheel hub assembly (includes items 19, 20, & 21)
	HHCS		Hex head cap screw
	*		Standard Hardware, Obtain Locally

FRONT & REAR CHAIN SHIELDING (OPTIONAL)



REF	QTY	BB6000X		BB7200X		BB8400X		DESCRIPTION
1	1	57143		57090		1023048		Right front chain plate
2	1	57144		57091		1023047		Left front chain plate
3	2	1003645		1007850		1007851		.243 Dia bent pin (front)
4	A/R	5496		5496		5496		5/16 7-Link chain (front)
6	1	57142		57088		57125		Right rear chain plate
7	1	57141		57089		57149		Left rear chain plate
8	2	57138		57085		57146		.243 Dia rolled bent pin (rear)
9	A/R	4069		4069		4069		5/16 4-Link chain (rear)
10	16	6697	*	6697	*	6697	*	3/8 NC x 1 Carriage bolt
11	16	14350	*	14350	*	14350	*	3/8 NC Flange hex nut

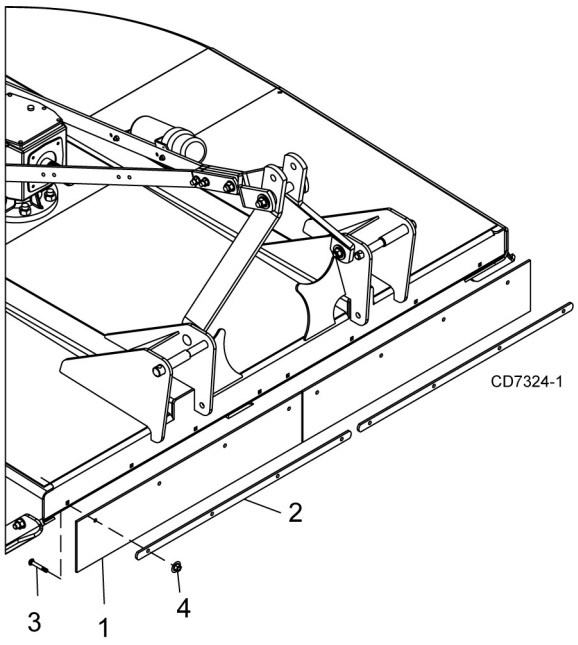
* Standard Hardware, Obtain Locally

A/R As Required

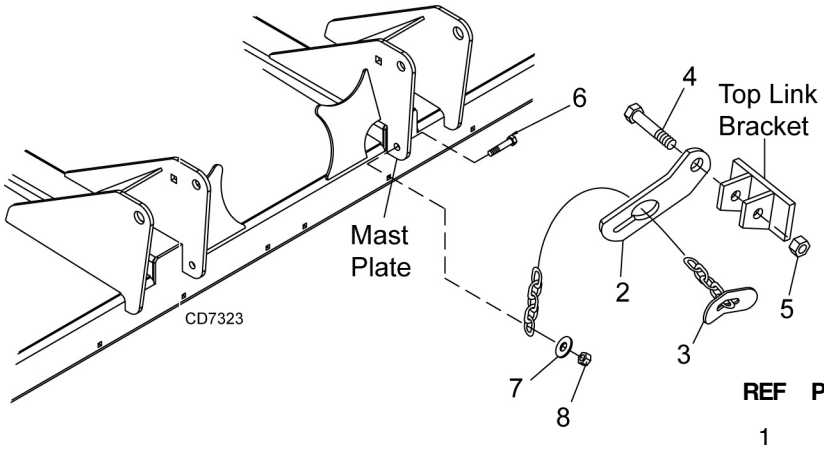
RUBBER SHIELDING

REF	PART	QTY	DESCRIPTION
A	1013208	1	Rubber shield kit 5 foot **BB6000X** (includes items 1-4)
A	1013209	1	Rubber shield kit 6 foot **BB7200X** (includes items 1-4)
A	1023042	1	Rubber shield kit 7 foot **BB8400X** (includes items 1-4)
1	1004129	2	Rubber deflector 31.25 **BB6000X**
1	1004130	2	Rubber deflector 37.25 **BB7200X**
1	1024119	2	Rubber deflector 43.25 **BB8400X**
2	1013214	2	Link, .25 x 1.00 x 28.75 **BB6000X**
2	1013215	2	Link, .25 x 1.00 x 34.75 **BB7200X**
2	1024118	4	Link, .25 x 1.00 x 16.00 **BB8400X**
3	6697 *	8	3/8 NC x 1 Carriage bolt
4	14350 *	8	3/8 NC Flange hex lock nut

* Standard hardware, obtain locally



CHECK CHAIN ASSEMBLY (OPTIONAL)

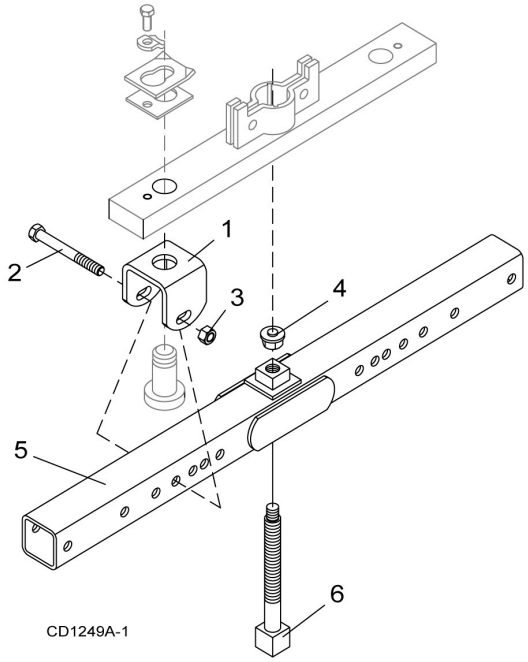


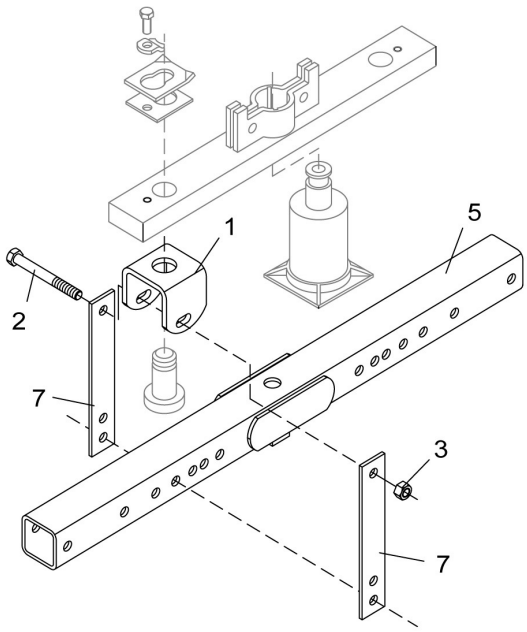
REF	PART	QTY	DESCRIPTION
1	10521	1	Check chain complete
2	7906	2	Check chain bracket, lower
3	18048	2	3/8 Chain, 32-Link and check lug
4	2377 *		3/4 NC x 6 HHCS GR5
5	2371 *		3/4 NC Hex lock nut
6	12274 *		5/8 NC x 2-1/4 HHCS GR5
7	3632 *		5/8 Flat washer, standard
8	6239 *		5/8 NC Hex lock nut

HHCS Hex head cap screw

* Standard hardware, obtain locally

CROSSBAR PULLER (OPTIONAL)

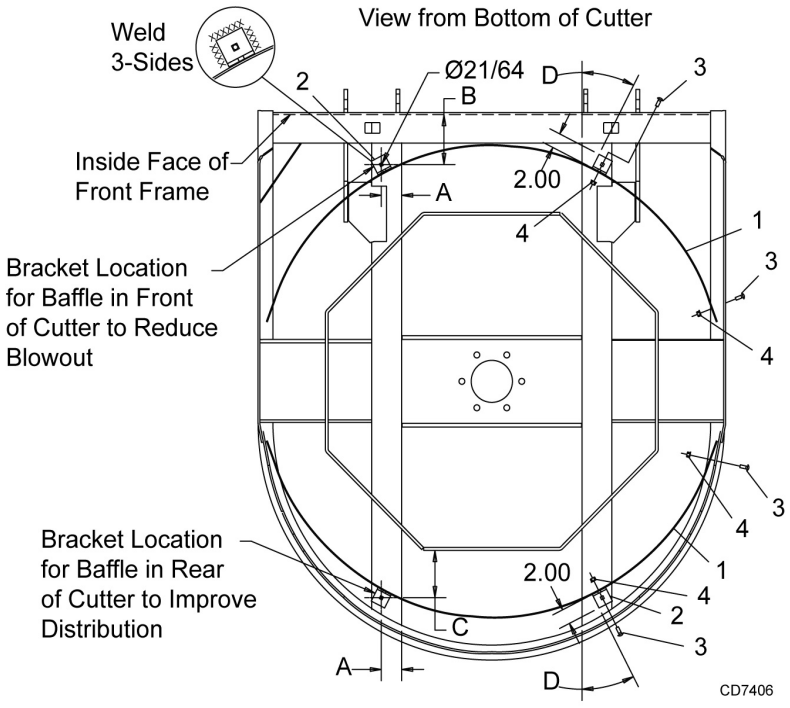




REF	PART	QTY	DESCRIPTION
A	8811	1	Crossbar puller, complete
1	19914	2	Crossbar puller clevis
2	3097 *	4	5/8 NC x 4-1/2 HHCS GR5
3	230 *	4	5/8 NC Hex nut
4	24879	1	Crossbar puller pad assembly
5	24876	1	Crossbar puller tube assembly
6	24881	1	Crossbar puller screw assembly
7	24885	4	Crossbar puller link

* Standard hardware, obtain locally

BAFFLE KIT (OPTIONAL)



REF	PART	QTY	DESCRIPTION
A	1019865	1	Baffle kit complete BB6000X **-or-**
A	1019866	1	Baffle kit complete BB7200X **-or-**
A	1019867	1	Baffle kit complete BB8400X
1	1004132	1	Baffle - BB6000X **-or-**
1	1004133	1	Baffle - BB7200X **-or-**
1	1004134	1	Baffle - BB8400X
2	1002046	1	Mounting bracket
3	6697 *	1	3/8 NC x 1 Carriage bolt GR5
4	14350 *	1	3/8 NC Flange lock nut

* Standard hardware, obtain locally

BOLT TORQUE CHART

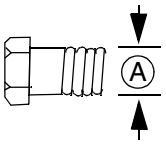
Always tighten hardware to these values unless a different torque value or tightening procedure is listed for a specific application.

Fasteners must always be replaced with the same grade as specified in the manual parts list.

Always use the proper tool for tightening hardware: SAE for SAE hardware and Metric for metric hardware.

Make sure fastener threads are clean and you start thread engagement properly.

All torque values are given to specifications used on hardware defined by SAE J1701 MAR 99 & J1701M JUL 96.



SAE SERIES TORQUE CHART

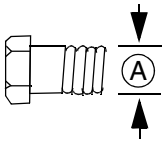
SAE Grade 2 (No Dashes)

SAE Bolt Head Identification

SAE Grade 5 (3 Radial Dashes)

SAE Grade 8 (6 Radial Dashes)

Ⓐ Diameter (Inches)	Wrench Size	MARKING ON HEAD					
		SAE 2		SAE 5		SAE 8	
		lbs-ft	N-m	lbs-ft	N-m	lbs-ft	N-m
1/4"	7/16"	6	8	10	13	14	18
5/16"	1/2"	12	17	19	26	27	37
3/8"	9/16"	23	31	35	47	49	67
7/16"	5/8"	36	48	55	75	78	106
1/2"	3/4"	55	75	85	115	120	163
9/16"	13/16"	78	106	121	164	171	232
5/8"	15/16"	110	149	170	230	240	325
3/4"	1-1/8"	192	261	297	403	420	569
7/8"	1-5/16"	306	416	474	642	669	907
1"	1-1/2"	467	634	722	979	1020	1383



METRIC SERIES TORQUE CHART

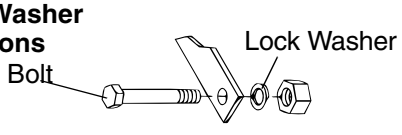
Metric Grade 8.8

Metric Bolt Head Identification

Metric Grade 10.9

Ⓐ Diameter & Thread Pitch (Millimeters)	Wrench Size	Coarse Thread				Fine Thread				Ⓐ Diameter & Thread Pitch (Millimeters)
		Marking on Head				Marking on Head				
		Metric 8.8		Metric 10.9		Metric 8.8		Metric 10.9		
		N-m	lbs-ft	N-m	lbs-ft	N-m	lbs-ft	N-m	lbs-ft	
6 x 1.0	10 mm	8	6	11	8	8	6	11	8	6 x 1.0
8 x 1.25	13 mm	20	15	27	20	21	16	29	22	8 x 1.0
10 x 1.5	16 mm	39	29	54	40	41	30	57	42	10 x 1.25
12 x 1.75	18 mm	68	50	94	70	75	55	103	76	12 x 1.25
14 x 2.0	21 mm	109	80	151	111	118	87	163	120	14 x 1.5
16 x 2.0	24 mm	169	125	234	173	181	133	250	184	16 x 1.5
18 x 2.5	27 mm	234	172	323	239	263	194	363	268	18 x 1.5
20 x 2.5	30 mm	330	244	457	337	367	270	507	374	20 x 1.5
22 x 2.5	34 mm	451	332	623	460	495	365	684	505	22 x 1.5
24 x 3.0	36 mm	571	421	790	583	623	459	861	635	24 x 2.0
30 x 3.0	46 mm	1175	867	1626	1199	1258	928	1740	1283	30 x 2.0

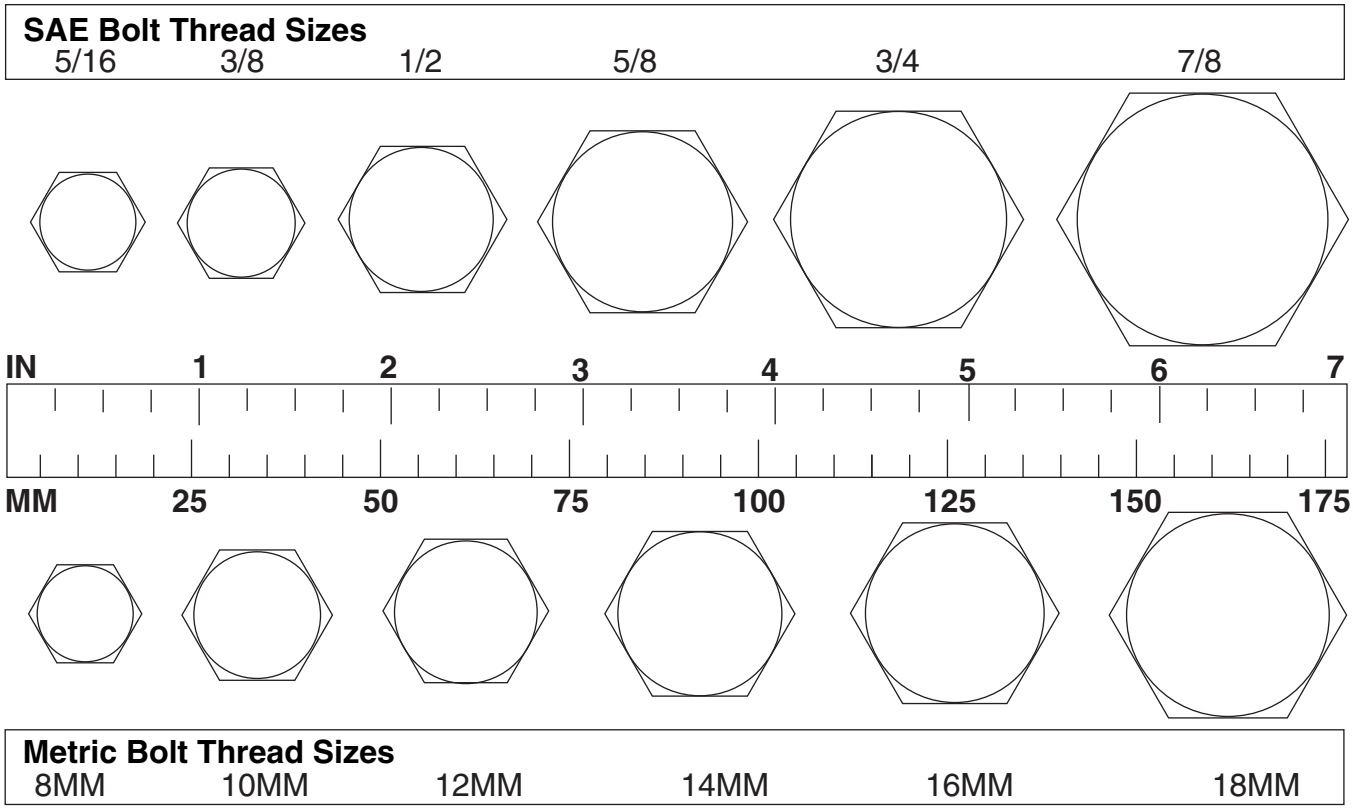
Typical Washer Installations



8/9/00

BOLT SIZE CHART

NOTE: Chart shows bolt thread sizes and corresponding head (wrench) sizes for standard SAE and metric bolts.



ABBREVIATIONS

AG ..... Agriculture
ASABE ..... American Society of Agricultural & Biological Engineers (formerly ASAE)
ASAE ..... American Society of Agricultural Engineers
ATF ..... Automatic Transmission Fluid
BSPP ..... British Standard Pipe Parallel
BSPTM ..... British Standard Pipe Tapered Male
CV ..... Constant Velocity
CCW ..... Counter-Clockwise
CW ..... Clockwise
F ..... Female
FT ..... Full Thread
GA ..... Gauge
GR (5, etc.) ..... Grade (5, etc.)
HHCS ..... Hex Head Cap Screw
HT ..... Heat-Treated
JIC ..... Joint Industry Council 37° Degree Flare
LH ..... Left Hand
LT ..... Left
m ..... Meter
mm ..... Millimeter
M ..... Male
MPa ..... Mega Pascal
N ..... Newton
NC ..... National Coarse
NF ..... National Fine
NPSM ..... National Pipe Straight Mechanical
NPT ..... National Pipe Tapered
NPT SWF ..... National Pipe Tapered Swivel Female
ORBM ..... O-Ring Boss - Male
P ..... Pitch
PBY ..... Power-Beyond
psi ..... Pounds per Square Inch
PTO ..... Power Take Off
QD ..... Quick Disconnect
RH ..... Right Hand
ROPS ..... Roll-Over Protective Structure
RPM ..... Revolutions Per Minute
RT ..... Right
SAE ..... Society of Automotive Engineers
UNC ..... Unified Coarse
UNF ..... Unified Fine
UNS ..... Unified Special

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WARRANTY

(All Models Except Mow'n Machine™ Zero-Turn Mowers and Woods Boundary™ Utility Vehicles)

Please Enter Information Below and Save for Future Reference.

Date Purchased: _____ From (Dealer): _____

Model Number: _____ Serial Number: _____

Woods Equipment Company ("WOODS") warrants this product to be free from defect in material and workmanship. Except as otherwise set forth below, the duration of this Warranty shall be for TWELVE (12) MONTHS COMMENCING ON THE DATE OF DELIVERY OF THE PRODUCT TO THE ORIGINAL PURCHASER.

Woods backhoe models BH70-X, BH80-X, and BH90-X are warranted for two (2) years from the date of delivery to the original purchaser.

The warranty periods for specific parts or conditions are listed below:

Part or Condition Warranted	Model Number	Duration (from date of delivery to the original purchaser)
Gearbox components	BW1260, BW1620, BW1800, BW2400	8 years
	BW240HD	7 years
	BB48X, BB60X, BB72X, BB84X, BB600X, BB720X, BB840X, BB6000X, BB7200X, BB8400X, DS1260, DSO1260, DS1440, TS1680, BW126-3, BW180-3, BW240	6 years
	PHD25, PHD35, PHD65, PHD95, 2162, 3240, DS96, DS120, RCC42, RM550-2, RM660-2, RM990-3, PRD6000, PRD7200, PRD8400, 7144RD-2, 9180RD-2, 9204RD-2, S15CD, S20CD, S22CD, S25CD, S27CD	5 years
	RDC54, RD60, RD72	3 years (1 year if used in rental or commercial applications)
Blade spindles	RM550-2, RM660-2, RM990-3, PRD6000, PRD7200, PRD8400, 7144RD-2, 9180RD-2, 9204RD-2	3 years
Rust-through	BB600, BB720, BB840, BB6000, BB7200, BB8400, BW126-3, BW180-3, BW1260, BW1800, BW240, BW240HD, 2162, 3240, DS1260, DSO1260, DS1440, TS1680	10 years

Under no circumstances will this Warranty apply in the event that the product, in the good faith opinion of WOODS, has been subjected to improper operation, improper maintenance, misuse, or an accident. This Warranty does not apply in the event that the product has been materially modified or repaired by someone other than WOODS, a WOODS authorized dealer or distributor, and/or a WOODS authorized service center. This Warranty does not cover normal wear or tear, or normal maintenance items. This Warranty also does not cover repairs made with parts other than those obtainable through WOODS.

This Warranty is extended solely to the original purchaser of the product. Should the original purchaser sell or otherwise transfer this product to a third party, this Warranty does not transfer to the third party purchaser in any way. There are no third party beneficiaries of this Warranty.

WOODS makes no warranty, express or implied, with respect to engines, batteries, tires or other parts or accessories not manufactured by WOODS. Warranties for these items, if any, are provided separately by their respective manufacturers.

WOODS' obligation under this Warranty is limited to, at WOODS' option, the repair or replacement, free of charge, of the product if WOODS, in its sole discretion, deems it to be defective or in noncompliance with this Warranty. **The product must be returned to WOODS with proof of purchase within thirty (30) days after such defect or noncompliance is discovered or should have been discovered, routed through the dealer and distributor from whom the purchase was made, transportation charges prepaid.** WOODS shall complete such repair or replacement within a reasonable time after WOODS receives the product. THERE ARE NO OTHER REMEDIES UNDER THIS WARRANTY. THE REMEDY OF REPAIR OR REPLACEMENT IS THE SOLE AND EXCLUSIVE REMEDY UNDER THIS WARRANTY.

THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE OF THIS WARRANTY. WOODS MAKES NO OTHER WARRANTY, EXPRESS OR IMPLIED, AND WOODS SPECIFICALLY DISCLAIMS ANY IMPLIED WARRANTY OF MERCHANTABILITY AND/OR ANY IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.

WOODS shall not be liable for any incidental or consequential losses, damages or expenses, arising directly or indirectly from the product, whether such claim is based upon breach of contract, breach of warranty, negligence, strict liability in tort or any other legal theory. Without limiting the generality of the foregoing, Woods specifically disclaims any damages relating to (i) lost profits, business, revenues or goodwill; (ii) loss of crops; (iii) loss because of delay in harvesting; (iv) any expense or loss incurred for labor, supplies, substitute machinery or rental; or (v) any other type of damage to property or economic loss.

This Warranty is subject to any existing conditions of supply which may directly affect WOODS' ability to obtain materials or manufacture replacement parts.

No agent, representative, dealer, distributor, serviceperson, salesperson, or employee of any company, including without limitation, WOODS, its authorized dealers, distributors, and service centers, is authorized to alter, modify, or enlarge this Warranty.

Answers to any questions regarding warranty service and locations may be obtained by contacting:

Woods Equipment Company

2606 South Illinois Route 2
Post Office Box 1000
Oregon, Illinois 61061 USA

800-319-6637 tel
800-399-6637 fax
www.WoodsEquipment.com

WOODS®

ALITEC™
BMP®
CENTRAL FABRICATORS®
GANNON®
GILL®
WAIN-ROY®
WOODS®

WARRANTY

(Replacement Parts For All Models Except Mow'n Machine™
Zero-Turn Mowers and Woods Boundary™ Utility Vehicles)

Woods Equipment Company ("WOODS") warrants this product to be free from defect in material and workmanship for a period of ninety (90) days from the date of delivery of the product to the original purchaser with the exception of V-belts, which will be free of defect in material and workmanship for a period of 12 months.

Under no circumstances will this Warranty apply in the event that the product, in the good faith opinion of WOODS, has been subjected to improper operation, improper maintenance, misuse, or an accident. This Warranty does not cover normal wear or tear, or normal maintenance items.

This Warranty is extended solely to the original purchaser of the product. Should the original purchaser sell or otherwise transfer this product to a third party, this Warranty does not transfer to the third party purchaser in any way. There are no third party beneficiaries of this Warranty.

WOODS' obligation under this Warranty is limited to, at WOODS' option, the repair or replacement, free of charge, of the product if WOODS, in its sole discretion, deems it to be defective or in noncompliance with this Warranty. **The product must be returned to WOODS with proof of purchase within thirty (30) days after such defect or noncompliance is discovered or should have been discovered, routed through the dealer and distributor from whom the purchase was made, transportation charges prepaid.** WOODS shall complete such repair or replacement within a reasonable time after WOODS receives the product. THERE ARE NO OTHER REMEDIES UNDER THIS WARRANTY. THE REMEDY OF REPAIR OR REPLACEMENT IS THE SOLE AND EXCLUSIVE REMEDY UNDER THIS WARRANTY.

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WOODS shall not be liable for any incidental or consequential losses, damages or expenses, arising directly or indirectly from the product, whether such claim is based upon breach of contract, breach of warranty, negligence, strict liability in tort or any other legal theory. Without limiting the generality of the foregoing, Woods specifically disclaims any damages relating to (i) lost profits, business, revenues or goodwill; (ii) loss of crops; (iii) loss because of delay in harvesting; (iv) any expense or loss incurred for labor, supplies, substitute machinery or rental; or (v) any other type of damage to property or economic loss.

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